UNIVERSITY OF TAMPERE

School of Management

Service Quality and Patient satisfaction & loyalty in public hospitals in Ho Chi Minh City

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ABSTRACT

The objective of this study is to examine the connection between the service quality and patient satisfaction and loyalty in Ho Chi Minh City public hospitals. This research is about to determine the dimensions of service quality, especially in health care sector. The most concentration is on the relationship between service qualities regarding to physical environment, interaction quality and outcome quality relating to patient satisfaction, patient loyalty in the context of public hospitals in Ho Chi Minh City. Subjects of the research are in-patients who have experience in health care service in these hospitals

This research is conducted in ten hospitals in Ho Chi Minh City only such as Nguyen Tri Phuong Hospital, People's Hospital 115, People's Hospital Gia Dinh, Trung Vuong Hospital, Binh Dan Hospital, Hung Vuong Hospital (obstetrics, gynecology), Children's Hospital 1, Children's Hospital 2, Tu Du Hospital (obstetrics, gynecology) and Oncology Hospital.

The results verify significant relationship among sub dimensions of physical environment quality and interaction quality (service quality) and two service performance measures: patient satisfaction, patient loyalty. Some factors that reflect the satisfaction – loyalty connection in the public health services are high switching cost, accessibility and lack of decent private healthcare services. Acquirement of long-term patient satisfaction, loyalty and image can be made possible with continuous monitoring of interaction quality and physical environment quality.

Key word: Service quality, patient satisfaction, Ho Chi Minh City, public hospital.

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CHAPTER 1. INTRODUCTION

1.1 Background

Parasuraman, Zeithaml, & Berry, (1985) indicated the importance of searching for quality as a constant consumer trend. The same point of view, Mart´ın-Consuegra, Molina, & Esteban, (2007) found that consumer demands higher quality in products and services than ever before. From the competitive edge, quality is use as an effective competitive tool. With good quality, service or product providers can get customer satisfaction, customer loyalty, significant market share, and event high return on investment (Haksever, Render, Russell, & Murdick, 2000). The successful organizations are usually aware of the importance of delivering qualitative services continuously to build image and sustain competitive advantage.

Service quality is one of the most important focuses of the service providers in health care sector. Because the final purpose of service providers in this sector is to achieve their reasonable objectives through improving their customers' health, and satisfying their customers' needs. There is always a positive relationship between patient satisfaction and patients' revisit frequency (Ruyter, Wetzels, & Bloemer, 1998; Sardana, 2003; Choi, Lee, Kim, & Lee, 2004).

In Vietnam health care sector, finding the proper way to improve service quality for meeting patients' expectations and getting patients' loyalty is also the first priority of public hospitals. Vietnamese consumers are more and more demanding about products and services offered to them for the fact that standard of living in the country is increasing year after year. Vietnam GDP per capita is continuously increasing and the trend is growing up also: 1,334 USD in 2010, 1,543 USD in 2011, and 1,755 USD in 2012, and 1,911 USD in 2013 and 2,052 USD in 2014 (World Bank, 2015). Health expenditure per capita increases: 83 USD, 93 USD, 102 USD, and 111 USD for the year 2010, 2011, 2012, and 2013 accordingly (World Health Organization Global Health Expenditure database 2013).

1.2 Research Problem

In Ho Chi Minh City, the public hospitals have also the same pressure of maintain patients' loyalty and satisfy patients' expectations through continuously improve service quality. People in Ho Chi Minh are even more demanding than those in the other cities for the fact that GDP of Ho Chi Minh City is the highest one compared to the other cities and provinces. They also pay more

for the health care services. According to report, GDP of HCMC (2014) achieved 852,523 billion VND, 9.6% growth vs 2015. In term of competition; Ho Chi Minh City is the place where public hospitals have more competitors than any other places in Vietnam.

In additionally, the reports of hotline of the Department of Health of Ho Chi Minh City showed that there are still many complaints about service quality in the public hospitals. The following figures are from the hotline report in quarter I 2015: 35/66 (53%) complaints about behaviors of hospitals' staff; 14/66 (21,21%) complaints regarding to medical insurance; 04/66 complaints about hospitals' processes; 03/66 complaints relating to service hour; the rest 08/66 complaints about hospital facilities.

Service quality topic can be found in many studies, but the one that focus on relationship between service quality and on satisfaction and revisit frequency in public health sector is quite scare.

Therefore a research of assessing the perception of patients for service quality of public hospitals in Ho Chi Minh City is a critical mission. That is the reason why the author has chosen the topic: "Service Quality and Performance in the Public Health Care Sector – Ho Chi Minh City Public Hospital Case Study".

1.3 Objectives of the research

The first priority of this study is to provide valuable insights and to define some initial recommendations to improve patients' satisfaction in Ho Chi Minh City public hospitals. To achieve this mission, the research is set to:

1. Examine relationship between the quality of service and satisfaction of patients
2. Examine relationship between the quality of service and patient's loyalty
3. Provide basic foundation of service quality and service performance in public hospitals in Ho Chi Minh City
4. Set measurement scales of the patient satisfaction in public hospitals in Ho Chi Minh City
5. Interaction between physical environment, interaction quality and patient satisfaction, patient loyalty

1.4 Scope of the research

In this research, there will determination of dimensions of service quality, particularly in healthcare segment. The most concentration is on the relationship between service qualities regarding to physical environment, interaction quality and outcome quality relating to patient satisfaction, patient loyalty in the context of public hospitals in Ho Chi Minh City. Subjects of the research are in-patients who have experience in health care service in these hospitals

This research is conducted in ten hospitals in Ho Chi Minh City only such as Nguyen Tri Phuong Hospital, People's Hospital 115, People's Hospital Gia Dinh, Trung Vuong Hospital, Binh Dan Hospital, Hung Vuong Hospital (obstetrics, gynecology), Children's Hospital 1, Children's Hospital 2, Tu Du Hospital (obstetrics, gynecology) and Oncology Hospital.

1.5 Structure of the Proposal

The proposal includes four chapters as following:

Chapter 1: Introduction

This chapter presents the research background, research questions and objectives of the research. The overview of the Research Proposal structure is also included.

Chapter 2: Literature review

The concepts of service quality, dimensions and measurement of service quality as well as related research in the hospital sector will be introduced in this chapter. The theoretical model of service quality and patient satisfaction & loyalty will be developed and adapted to the context of Vietnam health care sector. Details of each constructs and the hypotheses derived from the theoretical model are demonstrated in this chapter.

Chapter 3: Research methodology

The research approach, method of data collection, method of data analysis will be discussed in this chapter.

Chapter 4: Research Results

This chapter will show the results of data analysis as well as the hypothesis testing.

Chapter 5: Discussion and Conclusions

This chapter will provide the most important findings and discuss the managerial implications for practitioners and managers in public healthcare sector.

CHAPTER 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Service quality

The concept service quality is about how well the service providers meet the consumers' expectations (Lewis, 1993) or exceed the consumers' expectations (Reeves and Bednar, 1994). Expectations can be defined as the consumers' wants or what they believe they should be offered by the service providers. The term of service quality is derived from the theory of expectancy disconfirmation by Oliver (1980). The quality of service is considered under-satisfied when it fails to offer customers what they expected. When a consumer experiences a service then he thinks that it is more than his expectation, the service quality is more than satisfactory. Finally a consumer experience a service then he thinks that it is equal to his expectation, the service quality is merely to satisfactory. Consumer perceptions and consumer expectations are the tow parameters to assess and manage service quality. Sheetal and Harsh (2004) defined that service quality is operationalized as perception minus expectation.

According to the literature, numerous conceptualizations are shown over time. For instance, as stated by Lehtinen (1982), three quality dimensions are interactive, physical and corporate quality. As noted by Hedvall and Paltschik (1990s), two dimensions of willingness and capability to serve, and physical and psychological. Rust and Oliver (1004) considered quality as a function of three elements: functional quality, technical quality and environmental quality. Last but not least, Parasuraman et al. (1985) conceptualized service quality in term of comparing consumers' expectation and perception by using a disconfirmation model.

2.2 Service quality measurement – SERVQUAL and GAP model

Parasuraman et al. (1985) developed a model to measure the five gaps and ten service quality dimensions, known as SERVQUAL. It is the most popular model in the assessment of the quality of service nowadays. In studies on the quality of services, many people often focus on this model and the model adjusted from this model.

According to the model, there are five gaps which influence customer perception toward service quality. It is served as a framework for service providers to improve their quality of service.

Gap 1: Consumer expectations and management perceptions gap;

Gap 2: Management perspective – service quality specification gap;

Gap 3: Service quality specification – service delivery gap;

Gap 4: Difference between service delivery and external communication gap;

Gap 5: Difference between expectation and perspective of customers on service quality of customer gap.

Figure 2.1 illustrates these gaps and relationship between them. Of the five gaps, the first four ones are deprived from service provider, the last one origins form the customer opinion.

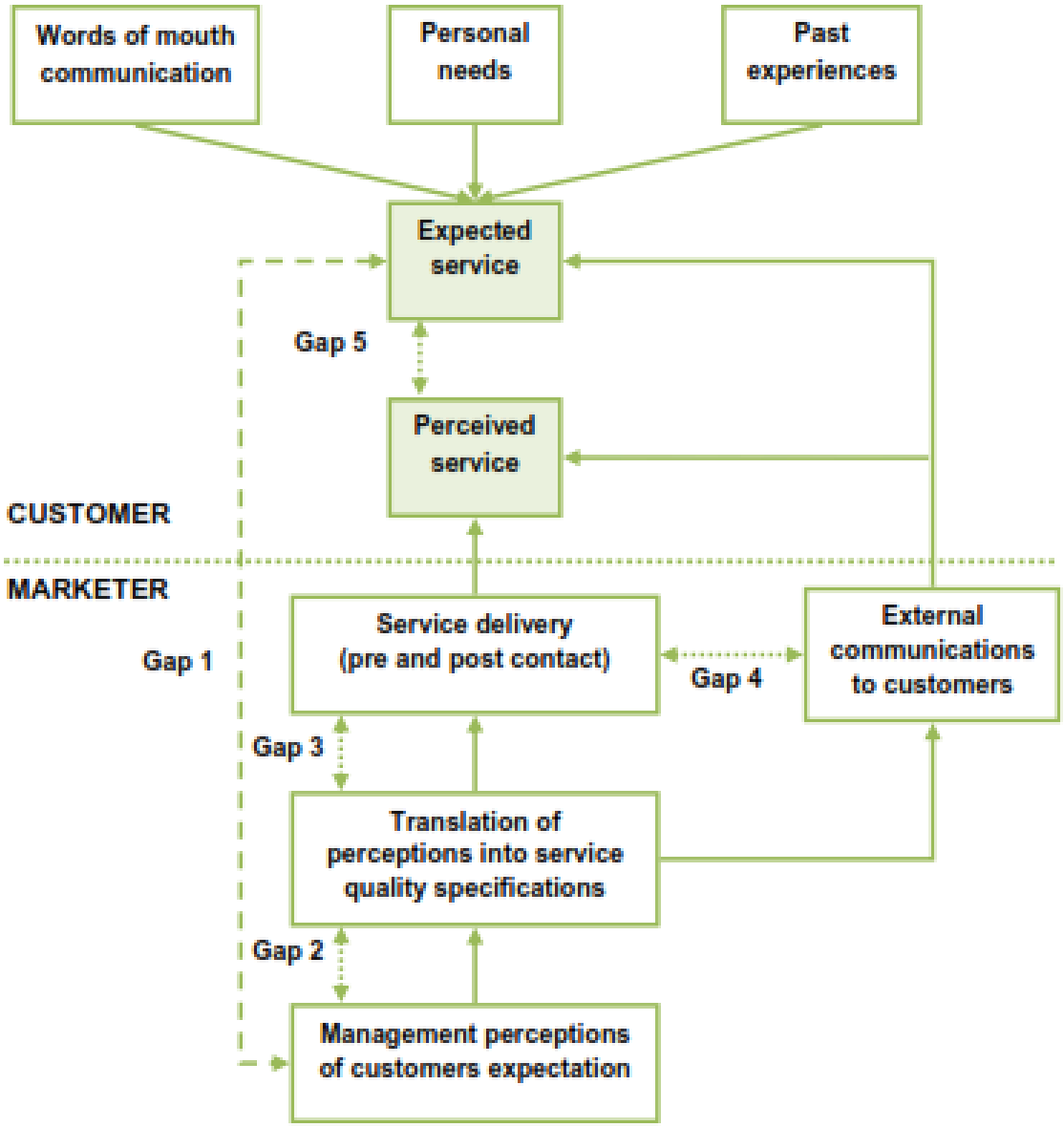

Figure 2.1: Gap Model of Service Quality

Source: (Parasuraman, Zeithaml, & Berry, 1985)

2.3 Service quality dimensions in hospital sector context

Different dimensions are used to access service quality in health care sector in literatures. Lehtinen (1982) mentioned the three service dimensions: physical quality, corporate quality, and interaction quality. Sharma and Chahal (1995) studied nontechnical and technical characteristics of the service encounters and found that there are four impacted parts namely, behavior of doctors, behavior of medical assistants, quality of administration, and quality of environment. They are the

significant components in assessing healthcare service quality. Newman and Pyne (1996) considered health-care service quality as a function of clinical audit, accessibility of treatment, explaining treatment to patient, good technical expertise, and patient satisfaction. Overveit (1997) reported three dimension of service quality as client quality, professional quality, and management quality. Camilleri and Callaghan (1998) indicated hospital environment, professional and technical quality, patient amenities, service personalization, and accessibility another significant features affecting service quality, in addition to physical interaction and corporate quality. Choi et al. (2004) redefined healthcare service dimension as physician concerns, staff concern, and convenience of care process, tangibles, and patient satisfaction.

2.4 SERVQUAL related research in the hospital sector

The work of Parasuramanet al. (1988) based on the SERVQUAL scales primarily impacts the research on service quality in hospital segment. As shown in Table 1, that the SERVQUAL instrument has been developed and utilized to measure service quality in a number of hospital sectors. In various countries, a number of studies approaching the perceived service quality have been carried out in the hospital sector.

Sohail (2003) studied the service quality in some hospitals in Malaysia and found that services that patients received exceeded their expectations in term of tangibility, reliability, responsiveness assurance and empathy. According to Wisniewski and Wisniewski (2005), the patients felt pleased with the whole of the service quality of the Scotland endoscopic clinic and the biggest service quality gap come from the reliability dimension and from improved premises there. Rohini and Mahadevappa (2006) found that to improve the service quality in Bangalore hospitals and particularly in reliability, the factors of empathy tangibles, responsiveness and finally guarantee need to be established. Arasli, Ekiz and Katircioglu (2008) determined five elements relating to the service quality of hospital in Famagusta like awareness in empathy: priorities for the in-patients' needs, relationship between staff and patients, professionalism of staff, food and the physical environment. The results of their research found that in the hospitals the in-patients had not been met their various expectations. According to Duggirala, Rajendran, and Anantharaman (2008), the patient assumed that the hospital's quality affects their satisfaction. As recommended by Ariffin and Aziz (2008), patients are the most sparing when it comes to the factor related to the tangible aspect and least forgiving to factors regarding the reliability aspect. It is demonstrated in the gap analysis between service expectations and perspective that the points for

expectations were lower than their perspective ones indicated in many service improvement efforts, which were required so as to boost the quality of service offered by hospitals in Malaysia. In the research by Quader (2009) on the gap between the expectations of patients and managers, it was discovered in hospitals in Benenden (England), there is an overestimation of patient expectation in aspect of reliability and responsiveness and a slight underestimation in aspect of tangibility by managers. There is no gap detected in the sympathy and assurance aspect. According to Butt and de Run (2010), the highest and lowest expectations and perceptions gap of service quality was informed in tangibles factor as it involved in the physical delivery of care at hospitals in Malaysia. As reported by Nwankwo, Frimpong and Dason (2010), there are unsatisfied provision of service in public hospitals in areas such as responsiveness of doctors, appointment time, duration of operation and assessing to core treatments. Zaim et al. (2010) examined the crucial indicators for measuring service quality in the hospitals in Turkey. They identified that that tangibility, dependability, courtesy and empathy significantly affect patients' satisfaction while responsiveness and assurance were not that influential. According to the study of Nekoei-Moghadam and Amir esmaili (2011) on service quality in some hospital of Kerman University's Medical Sciences, the greatest inconsistency between patients' expectations and perspective were in Al-Hawary et al. (2011) researched a hospital in Jordan and found that high perceived quality depends on hospital staffs (consisting of academic /professional qualifications and sound medical experience), comfortable accommodations for in-patients and caregivers (involving in doctors, nurses and health professionals) but that lower perceived quality at the hospital was due to an inadequate number of drug stores to dispense medicine, long wait times to see the attending doctor and expensive medicine tangibles dimension. Responsiveness was the second followed by reliability, assurance and empathy. It was figured out by Suki et al. (2011) that the perceptions of the Malaysian private healthcare system are below what patients really expect, i.e. patients can't tolerate the waiting time exceeding 1 hour and the healthcare provider's slow response to troubles. Al-Hawary (2012) tested the hospitals' health care services quality in Jordan and Saudi Arabia. The study showed that accessibility were better provided in Saudi Arabia hospitals and that tangibles were perceived better in the hospitals in Jordan.C¸ eelik and S¸ ehribanog˘ lu (2012) showed that tangible service quality aspect had the individually greatest impact on satisfied awareness of patients in Turkey's hospitals; empathy and reliability were found to have lower effects. Zarei et al. (2012) researched the hospitals' service quality in Iran and evaluated it from the patients.

They discovered that the highest expectations and perspectives were related to the tangibles factors and the lowest expectation and perception engaged to the empathy factor.

2.5 Relationship between service quality and outcome quality (customer satisfaction and customer loyalty)

As stated in Sureshchandar et al., (2002, p. 363), the satisfaction of customers should be considered as multi-dimensional construct just like service quality. In other words, it means that there are chances that it can happen at multi levels in an organization and that it should be operationalized on the same factors which service quality is operationalized. According to suggestion by Parasuraman et al., (1985), the high perceived service quality contributes to an increase in customer satisfaction. The fact that service quality contributes to satisfaction is supported by him and is in line with Saravana & Rao, (2007, p.436) and Lee et al., (2000, p.226) who recognized that customer satisfaction is based upon the level of service quality provided by the service provider. According to Negi, (2009, p.33), the idea of connecting service quality and customer satisfaction has been around for quite a period of time. In his study, he investigates the importance of customer-perceived service quality in defining customer ultimate satisfaction in the context of mobile services (telecommunication). He discovered that the main factors in evaluation of overall service quality are reliability and network quality (an additional factor). However, it is also shown that tangible, empathy and assurance should not be overlooked when it comes to evaluating the perceived service quality and customer satisfaction. This study was based only on a specific service industry (mobile service) and we believe it is very crucial to determine and evaluate those factors which contribute significantly to identification of customer-perceived service quality and overall satisfaction. Fen & Meilian, (2005, p.59-60) discovered that both service quality and customer satisfaction lead to a positive influence on customer's re-patronage intentions indicating an extremely important role of both service quality and customer satisfaction in the success and survival of any business in the competitive market. This study proved a close relationship between service quality and customer satisfaction. In a study carried out by Su et al., (2002, p.372), it was discovered and concluded that the connection between service quality and customer satisfaction influence each other to a great extent where any increase in one aspect can contribute to an increase in another aspect. In addition, it is specified that service quality is way more theoretical than customer satisfaction due to the latter being the reflection of customers' emotions about many experiences with service firm while service quality may be affected by perceptions of value (benefit relative to cost) or by the experiences of others that may not be as

good. According to a study carried out by Magi & Julander (1996), there is a positive relationship between perceived service quality, customer satisfaction and customer loyalty shown among grocery stores in Sweden. It was confirmed that high perceived quality leads to customer satisfaction and subsequently building of customer loyal. However, satisfied customers do not guarantee customers' loyalty.

2.6. Research model and hypotheses

The study focuses on the relationship between service quality and outcome quality in health care sector. Therefore, the physical environment, interaction quality, patient satisfaction and patient loyalty will be mentioned in the following sections.

2.6.1 Physical Environment and Patient's Satisfaction and Loyalty

There is always a certain impact of the physical environment quality on the evaluation of customer about the services they used (Parasuraman et al., 1985; Bitner, 1992; Rust & Oliver, 1994; Brady & Cronin, 2001). The literatures also show a positive connection between physical environment quality and its three factors: ambient condition; social factor; and tangibles. Consumer attitude about ambient conditions, social factors, and tangibility directly and positively influence physical environment quality.

Hypothesis 1 (H1): Physical environment has a positive relationship with patient satisfaction in the public hospitals

Hypothesis 2 (H2): Physical environment has a positive relationship with patient loyalty in the public hospitals

2.6.2 Interaction and Patient's Satisfaction and Loyalty

Unlike any kind of products, services are intangible and the process of providing and consuming service happens at the same time. They are characterized by inseparability features (Lovelock, 1981). Brady & Cronin (2001) found that the interaction that occurs during the service delivery has the greatest effect on service quality perceptions of the consumers. One important dimension of interaction quality is attitude and behavior (Brady & Cronin, 2001). Another dimension of interaction quality is the expertise of the staff. The third important dimension that

affects interaction quality is process quality (Sardana, 2003).Attitude and behavior of staff, expertise, and process quality directly and positively affect the quality of a service interaction.

Hypothesis 3 (H3): Interaction quality has a positive relationship with patient satisfaction in the public hospitals

Hypothesis 4 (H4): Interaction quality has a positive relationship with patient loyalty in the public hospitals

In summary, the Research Model is built as follows:

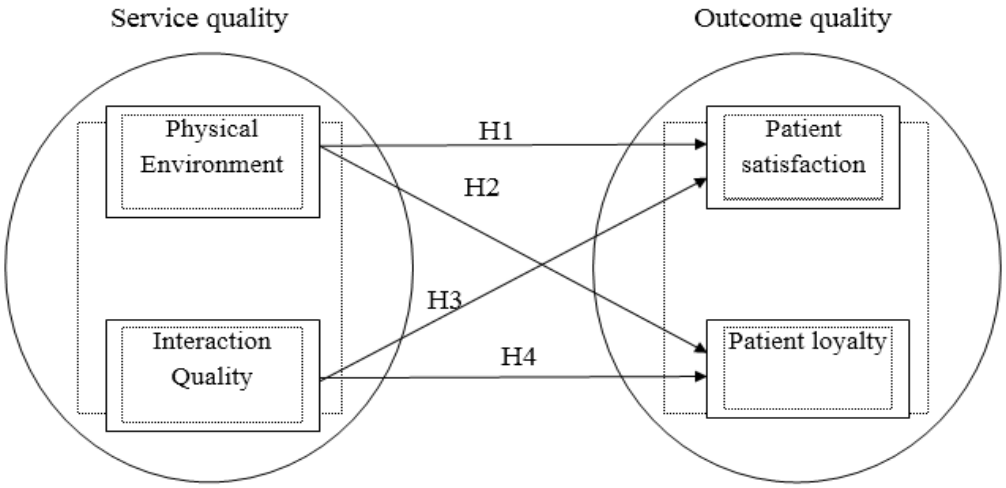

Figure 2.2: Service quality and outcome quality in the Public Hospitals

In which the outcome quality in the Public Hospitals, regarding to Patient satisfaction and Patient loyalty, is affected by the function of six factors: Ambient condition, Tangibles and Social factor mentioned as Physical environment; Attitude and behavior, Expertise, and Process quality viewed as Interaction quality.

Physical environment's Factors:

– The ambient condition factor includes non visual aspects like temperature, scent, and music (Bitner, 1992); internal atmosphere (Brady & Cronin, 2001); and natural light, fresh air (Chahal & Sharma, 2004). It also regards to overall cleanliness, and outer appearance of the hospital.

– The tangible factor can be described as facilities, equipment and appearance of personnel (Conway & Willcocks, 1997); waiting room and amenities (Choi et al., 2005); technical services (Chahal & Sharma, 2004) and seating arrangements (Kang & Jeffrey, 2004). This factor also relates to required medicines are well equipped in medical store of the hospital.

– The social factor is the third factor that affects outcome quality. It relates to key sub factors like access to hospital staff (Bitner, 1992); transparency and ethics in decision, good service with reasonable cost and public responsibility (Sardana, 2003).

Interaction Quality's Factors:

– The attitude and behavior factor viewed as interaction quality is regarding to the way that doctors, nurses or hospital staff behave toward to patients and their friends and relatives. The sub-factors such as friendliness, helpfulness, ability to clear patient queries, honesty, support, and care can be used to assess the attitude and behavior of staff (doctors, nurses, supporting staff). They also affect directly interaction quality (Chahal et al., 2009; Chahal & Sharma, 2004).

– The expertise mentions mainly to the technical skill of hospital staff. The expertise, put simply, comprises correct diagnoses and adequate knowledge by the staff in their respective fields.

– Last but not least, process quality is another factor that influences both patient satisfaction and patient loyalty. A hospital is a complicated system, which integrates personnel drawn from different fields such as medical, paramedical, and administration that are needed to work as a team. It has various support service infrastructure in areas of dietary service, sanitation, supplies, laundry, and housekeeping.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research process

The below research process steps will be included in this study:

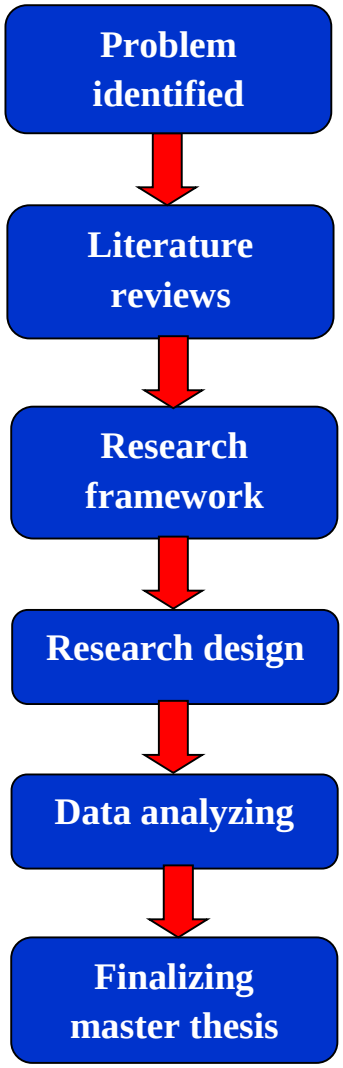

Figure 3.1: Research Process

3.2 Measurement scale

Variable		Indicators	Author
Physical environment quality	**Ambient condition**	1. Internal atmosphere is well maintained	Hardeep Chahal & Neetu Kumari (2010)
		2. Overall cleanliness of the hospital is excellent	
		3. Natural light is found in hospital	
		4. Fresh air is found in the hospital	
		5. Outer appearance of the hospital is good	
		6. Toilets are not clean	
		7. Wards are peaceful	
	Tangibles	1. Waiting rooms are well furnished	Hardeep Chahal & Neetu Kumari (2010)
		2. Operation theatre is well equipped with up-to-date equipments	
		3. Good technical services are delivered	
		4. Dustbin and spittoons are provided in the wards	
		5. Supportive facilities such as public telephone are easy to use	
		6. Emergency services are very good	
		7. Medical stories well equipped with required medicines	
	Social factor	1.Hospital had good impression of its services on other patients	Hardeep Chahal & Neetu Kumari (2010)
		2. Transparency and ethics in delivery treatments	

		3. Promotes hygienic lifestyle	
		4. It provides service to people belonging to all strata of the society	
		5. It delivers good service at a reasonably minimal cost, but not at the expense of society	
		6. A sense of public responsibility exists among employees	
Interaction quality	**Attitude and behavior**	1. Doctors and nurses answer your queries satisfactorily	Hardeep Chahal & Neetu Kumari (2010)
		2. Doctors and nurses are always helpful and supportive	
		3. Doctors are honest to their profession	
		4. Doctors paid enough consideration to my concerns in deciding on a medical procedure	
		5. Nurses treat your friends and relatives very nicely	
		6. Nurses explain clearly about technical treatment	
		7. Hospital staff is not generally co-operative	
	Expertise	1. Staff is not adequately competent	Hardeep Chahal & Neetu Kumari (2010)
		2. Physicians have the ability to explain logically	
		3. Physicians have sufficient knowledge about their field	
		4. Physician always diagnosis the diseases correctly	
		5. Technical supporting staffs are very careful while making tests, administering injections, etc	
	Process quality	1. Carrying out the services right at the first time	

		2. Providing services at specified time	M Arab et al., (2012)
		3. Error-free and fast retrieval of documents	
		4. Telling when services will be performed	
		5. Prompt provision of medical and non-medical services	
		6. Willingness of personnel to help patients	
		7. Personnel immediate presence whenever called	
Patient satisfaction		1. You always visit this hospital for all types of treatments	Hardeep Chahal & Neetu Kumari (2010)
		2. Your expectations are fully met with regard to doctors	
		3. Your expectations are fully met with regard to nurses	
Patient loyalty		1. Positive word of mouth about hospital	M Arab et al., (2012)
		2. Recommending hospital to others	
		3. Willingness to reuse the services of hospital	

Table 3.1: Measurement Scale

3.3 Sampling design

Ten hospitals with many negative reflection on the quality in general and infrastructure in particular are Nguyen Tri Phuong Hospital, People's Hospital 115, People's Hospital Gia Dinh, Trung Vuong Hospital, Binh Dan Hospital, Hung Vuong Hospital (obstetrics, gynecology), Children's Hospital 1, Children's Hospital 2, Tu Du Hospital (obstetrics, gynecology) and Oncology Hospital. That is the reason why these hospitals are targeted hospitals for this research. The surveys will be randomly distributed to patients or relatives of patients undergoing inpatient treatment in the ten hospitals in weekly meeting with patients held by the hospitals.

According to De Coster, J. (2004), minimum sample size utilized in statistical analysis should be equivalent to or greater than five times of the number of independent variables, but not less than 100 to give reliable results

Summary, with 45 questions and 6 independent variables, this research needs 225 samples at least to take EFA and regression. Therefore 100 surveys should be distributed to each target hospital. 500 surveys will be collected for analysis.

3.4 Data collection method

Primary and secondary are two sources utilized by the author to attain data for the research. Through the survey with questionnaires to respondents, the collected primary data demonstrate the reality of patients' feedbacks regarding the service quality, their satisfactory level as well as their willingness to reuse the service provided by the hospitals. Furthermore, the additional usage of journals, academic literature, books, and offline and online discussion and article as the secondary, both collection sources allows the research to deeper follow the stated purpose.

3.4.1 Secondary data sources

The author primarily used the secondary data from forum discussion and articles of some experts in Healthcare sector. Aiming for more accurate evaluation, the author made use of both primary and secondary information and data. This combination allows the author to completely achieve the research objective.

3.4.2 Primary data sources

Every week, the hospitals in Ho Chi Minh City have held meetings to get feedbacks of patients receiving inpatient treatment at the hospitals. The author gathered data by conducting patient surveys at this weekly meeting. To ensure the objectivity of the survey, the author conducted the survey with patients directly (or via patients 'relatives who directly take care the patients) and not having the hospital staff collects data. 50 questionnaires were distributed to 10 selective hospitals (see in Appendix 4). The reason for choosing these hospitals is that they are hospitals which have the biggest number of patients and are always in overload. These hospitals also have the large number of staffs.

The author got back 464 valid questionnaires. The sample size of this research (464 samples) was larger than the minimum requirement for multiple regressions (225 samples).

3.5 Data analysis method

The primary instrument utilized to analyze data is SPSS version 20.0 for Windows. There is also usage of Microsoft Excel and Word version 2013 for drawing and illustration of chart. In this research, to assess the reliability of measurement scale and the validity of sample data, there is supposed utilization of Cronbach Alpha Reliability and Exploratory Factor Analysis (EFA). As referred to the research, there are presences of 2 factors and 6 observed variables that affect patient satisfaction and patient loyalty (service performance) in public healthcare sector. KMO (Kaiser-Meyer-Olkin) test and Bartlett test will be also utilized to measure the compatibility of sample.

3.6 Timeline of research

Table 3.2: Implementation Plan

Activity	Timeline							
	Nov	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Pre-test questionnaire and revise								
Data collection								
Data analysis								
Writing Master Thesis								
Submit Master Thesis								

CHAPTER 4. RESEARCH RESULTS

4.1General introduction of Health Department of Ho Chi Minh City

4.1.1 Background information

- Location: 59 Nguyen Thi Minh Khai, Ben Thanh Ward, District 1, Ho Chi Minh City.
- Telephone numbers: (08) 39309912 – 39309967. Fax: (08) 39307035 - 39309088
- Website: www.medinet.hochiminhcity.gov.vn
- Establishment: On 10/11/1975, People's Committee of Ho Chi Minh made a decision to establish Heath Department under document number 207/TCCQ.
- Organization structure:

Currently, Health Department of Ho Chi Minh City has 8 featured departments, inspectorate and 49 affiliated units. The total number of employees under the management of health department is 24.512. 4.914 employees from the deparment hold a bachelor degree of which there are 193 PhD holders, 1210 master holders. In addition, the Health Department also manages the professional activities of health divisions of 24 districts, 24 Centre for Preventive Medicine of the city, 23 district hospital, 38 non-public hospitals and private healthcare organization based on the city.

4.1.2 Mission

Follow Decision No. 25/2009 / QD - Committee, March 27, 2009 of the People's Committee of Ho Chi Minh City on promulgating regulations on the organization and operation of the Department of Health.

Health Services is specialized bodies of the municipal People 's Committee has the function of advising and fascinating the municipal People 's Committees in performing the state management of care and protection of people's health including: Preventive healthcare; healthcare; rehabilitation; traditional medicine; drug prevention and treatment of human disease; cosmetic; food safety; Medical equipment; population; health insurance,… In addition, carry out some missions, rights based on level of decentralization, authorized by the municipal People 's Committee and the provisions of law.

4.1.3 Achievements

Health Department of Ho Chi Minh City has made efforts to carry out instruction and take direction from Ministry of Health, the City Party Committee, People's Council Resolutions and the People's Committee of Ho Chi Minh City. In the last years, staffs from Health Department of Ho Chi Minh city have successfully completed the tasks assigned to the following results:

Table 4.1: Data of achievements

No	Target	Unit	2009	2010	2011	2012	2013
1	Number of doctors/10.000 persons	Person					
	Planned		9	10	13	13.5	14
	Actual		9	12	13	13.5	14
2	Number of beds/10.000 persons	bed					
	Planned		30	41	42	42	42
	Actual		30	41	42	42	42
3	Proportion of district that have medical station	%					
	Planned		100	100	100	100	100
	Actual		100	100	100	100	100
4	Percentage of medical stations that have doctors	%					
	Planned		82	88	90	85	87
	Actual		82	88	90	85	100
5	Percentage of population staffs at commune level	%					
	Planned		100	100	100	100	100
	Actual		100	100	100	100	100
6	The mortality rate of children under 5 years old	‰					
	Planned		2.5	2.3	9.5	<9.25	<10
	Actual		1.67	*9.74	10.04	8.73	<9

7	The percentage of malnourished children under 5 years old	%					
	Planned		<7.6	<7.6	<8	<8	<8
	Actual		<7.6	6.8	7.7	<8	<8

Notes: Date about mortality rate of children under 5 years of age from 2010 is higher than in previous years due to the implementation of new form of data collection system..

Every year, following the instruction of the Ministry of Health and the City People's Committee, Department of Health urgently issues documents, plans and programs instructing units under its management to take the target set out seriously and also to implement action programs to ensure the implementation of healthcare, treatment and patient service efficiently. At the same time, actively advice city People's Committee to direct the units and organization to better prevent dangerous diseases (especially the situation of measles, dengue fever, hand foot and mouth disease in recent times); always in prepared of humans, material and financial resources for disease prevention activities. Over the years, there has been sustainable success in prevention of major epidemics. Although there were some sporadic outbreaks, they were promptly extinguished.

Medical Treatment:

Health Department of Ho Chi Minh has made an outstanding performance in completing the assigned tasks in implementing and advising on healthcare and protection of people.

In 2013, the city health sector has managed to diagnose and treat 29.92 million patients. Total number of inpatient is 1.363 million which is approximately comparable to the same period in 2012.

Implement methods to reduce overcapacity in central hospital: Every year, the city health sector must diagnose and treat over 30 million patients in which 40% to 50% of patients are from other provinces. Following instruction from Ministry of Health, municipal and People's committee, health department implement proposals to reduce the problem of overloading. Some of the proposals are as follows: Establish satellite department in central hospital; build satellite clinics; implement family doctor model; carry out 1816 scheme of ministry of health; work on administrative reforms; ensure that general and specialized hospitals send doctors to help with profession for a period of at least one year at district hospitals.

Some results are as follows:

- Establishment of a satellite department in the city hospital: Hospital Orthopedic started satellite department in An Binh Hospital with 100 beds, and in Tan Phu District Hospital with 50 beds, capacity utilization reached 100% inpatient beds; Children's Hospital 1 implemented satellite faculty at Tan Phu District Hospital with 50 beds and 150 pediatric beds in Binh Tan district, the number of patients were examined and treated is about 2062 , the number of inpatient treatment at the hospital increased by 40%, referral rate decreased by 15.3%. Oncology Hospital built satellite faculty in District 2 Hospital with 150 beds. Children's Hospital has started two satellites faculty in district 2 Hospital with size of 50 beds, the number of patients examined and treated increases more than 30%.

- Establishment of satellite clinics: Department of Health instructed 17 hospitals in the city to send 59 doctors to the district hospitals to establish 48 satellite clinics in 12 hospital districts.

- Since 2008, efficient implementation of scheme 1816 of Ministry of Health:

"Bachelor professional staff from the upline hospitals to supports downline hospitals to enhance the healthcare quality". Department of Health has sent medical workers with highly specialized profession to support and transfer technique to more than 50 hospitals in 31 provinces and cities to enhance the quality of healthcare service of the local people here.

- Administrative reforms: Improve the check-up and treatment process, shorten waiting time for check-up as well as preclinical testing. Improve the quality of treatment, enhanced outpatient treatment, reduce day treatment, and shorten the length of hospital stay.

- Improve the quality of hospitals and development of high-tech medical: Currently, the city health network is arranged on the basis of widely distributed, very accessible by people. With more than 33000 beds, achieve the rate of 42 beds/10000 persons. Medial network managed to achieve the objectives set, develop synchronously both medical infrastructure as well as health specialization, ensure healthcare for people and achieved many significant accomplishments. Many specialized medical fields, Vietnamese doctors take up the mentor role, exchanging technique with other countries. Through assessment on capacity of city health department, it can be proudly confirmed that, Ho Chi Minh City is the center of specialized medical and equipped with high technology in near area and nationwide with a system of leading specialized hospitals

such as Cancer, Blood - Hematology, Obstetrics, Pediatrics, Orthopedics, Ophthalmology, Otolaryngology, 115 People's Hospital, Gia Dinh People's Hospital. Healthcare system has contributed greatly to improving the health of the entire population, contributing to the increase in average lifespan, reduce mortality rate making Vietnam comparable to the higher income countries.

Besides, to meet the increasing need for healthcare and medical treatment of people, in 2013, health department developed and implemented rating of hospitals according to 83 criterias set by the ministry. This is to encourage hospital to develop, advance quality of healthcare and also help city health sector to determine the priority in improvement of quality in each and every hospitals.

a) Prevention of diseases.

Since 2016, the city health sector has effectively implemented 12 National Target Programs and actively executed another 22 health programs. As such, it has been able to efficiently monitor and control outbreaks of infectious diseases such as SARS, influenza A H5N1 epidemic, mumps, hand foot and mouth.

The utilization of communication system to guide people on prevention measures for various diseases such as dengue, 'hand, food and mouth', swine influenza, diarrhea… has been widely implemented in 24 districts of the city. This measure has proven to be extremely effective and hence directly contributes to the positive change in the awareness and behavior of people towards disease prevention.

The efficient infectious disease monitoring systems from hospital s, center for preventive medicine at city level, center for preventive medicine at district level - commune health stations, has contributed to early detection and timely handling of outbreaks. Beside, disease control activities in school are gradually put in place which also allows early and timely detection and control and hence limits the spread of disease in school and communities.

Deploy well the updated training on diagnosis and treatment of Dengue hemorrhagic fever as well as' foot, mouth, ear' for the doctors and nurses at the hospital and the province within assigned mentoring following the yearly plan.

b) The national target programs and health programs of the city

Overall, 10 national and health program have achieved or even surpasses the target set. The 10 programs include: National Strategy for nutrition, malaria prevention program, TB control program, Program on HIV/AIDS, expanded program on immunization, school health programs, programs Tobacco Prevention, health promotion program work, health Care Program migrant worker , Population - Family Planning.

c) The Pharmacy

Due to the poor economic situation, since 2013 the price of medicine seems to follow a decreasing trend. Also, intense competition brought about by drug procurement Circular 01 of the Ministry of Health leads to many companies resolve to price reduction. Despite that, the situation of drug prices remains stable and under control of the state authorities.

Health Departments works on improving and creating more supply sources for drug companies. In addition, more actions are taken in area of reservation, storage, stabilization of drug supply in pharmacy as well as ensuring drug selling points follow regulations under drug stabilization programs. Through various inspections, it is found out that companies have actively participated in drug stabilization program. Moreover, production capacities, quality of drugs as well as the discovery of more drugs supply sources are progressing continuously and stably. The company has sufficient staffs to deliver the drugs to the points involved in stabilizing process.

Health committee division in district has carried out inspection of pharmacies involved in stabilizing in the local area. The pharmacies comply with commitments accordingly. In Drug price stabilization program in 2013, there are 13 businesses participating in the program with 392 items, 21 treatment groups, 80 active elements. In April 2013, health department issued additional 612 stabilizing drug selling point bringing the total number of outlets to 2,756. Since the beginning of the program, the revenue is 62,501,952,340 VND.

d) Development of traditional medicine:

General hospitals and district hospitals which proactive traditional medicine is operating very well implementing Decision 2166 / QD - TTg dated 30/11/2010 of the Prime Minister on the issuance of the action plan of the government to develop medical and traditional pharmacy through 2020 . Developing clinical methods with traditional medicine, combining traditional medicine and

modern medicine in the diagnosis and treatment of patients; focus on health care by non-pharmacological methods such as acupuncture, massage…

e) Develop medical facility:

- Investing in upgrading facility and equipment: Currently, in addition to the construction of key hospitals in gateway, there is also focus on enhancing the quality of health care in district hospital and medical stations to strengthen and develop the network health facility to reduce overcrowding in these tertiary institutions. The investment for district hospital and medical stations is not only for the infrastructure, equipment but also the quality of human resources.

- For district hospital: Many hospital districts have been built and put into operation , serving the medical examination and treatment for people in the area. Some hospitals are: District 6 Hospital, Tan Phu District Hospital, Binh Tan District Hospital and Cu Chi District Hospital (under construction); also carry out renovation, upgrade and expansion of some hospitals such as district 2, 11 hospital, and Thu Duc district hospital. In addition, a number of new construction, renovation and expansion projects have caught the attention of district People's committee and would be implemented if there is sufficient fund.

- For medical station: Department of Health has piloted Family Physicians Clinic at the Health Clinic, Co Giang Ward (District 1) , Tan Hung Ward Health Station (District 7) which shows some initial success , creating confidence for people.

- **Improving the quality of medical expertise:** Department of health has effective implement Designation 06/CT-BYT about improving the quality of healthcare service in district hospital and medical stations through the implementation of annual project 1816, satellite clinic model (established 48 satellite clinics in 12 district hospitals), satellite department (Pediatrics at the Hospital of Binh Tan, Tan Phu District Hospital , Hospital District 2; Orthopedic faculty at Tan Phu and Binh Tan District hospitals; rotation and alternation of doctors to support in specialty, treatment and technique exchange in district hospital so as there is no need to send patients to higher level hospitals for treatment and hence reduce the problem of overcrowding. Beside, doctors at district hospital are given a chance to enroll in specialized trainings, and receive training and technology transfer from the city's hospitals.

At the same time, the newly graduated doctors are specially trained for 2 years at the central hospital and then assigned to district hospitals to supplement human resources with appropriate professional qualifications.

- Implementation of compensation policy to attract more workers to work at health network:

In addition to the modes and policies comply with regulations, now the city is implementing quite a number of policies and remuneration in order to attract highly qualified staff to work in the health care medical facility such as:

- Curriculum for master, doctorate in medicine and pharmacy in Ho Chi Minh City for period of 2011-2015 (Decision No. 3738/QD - Committee July 23, 2012 of the Municipal People's Committee). 300 people are expected to enroll in this program.
- Regarding policies targeted at staffs: Each medical staff working at medical stations would receive monthly allowance in addition to professional training program and their wages as followed general regulation of the State.
- Orientation training for postgraduate doctors who are assigned to district hospitals and medical stations (Official Letter No. 3237 / Committee- VX July 6, 2012 of the Municipal People's Committee). Under this program, the doctor graduated from the University of Medicine Pham Ngoc Thach who are assigned to work district hospitals and medical stations (Official Letter No. 3237 / Committee- VX July 6, 2012 of the Municipal People's Community will undergo postgraduate specialty training for 10 months). During the training period, they will also receive salary and have to commit to returning to serve the healthy facility for minimum 5 years.

f) Inspection of health service

Department of Health strengthens the inspection and supervision of the activities carried out by medical organization, private pharmaceutical, food-related organization; ensure the quality, efficiency and schedule of the inspection program; publish the final conclusions of the inspections; monitor, inspect and supervise the implementation of conclusions, recommendations and decisions on inspection.

Health department efficiently listens and answers to complains and feedbacks of people. Much effort has been put on to come out with long-term and effective solutions which brings about positive impact on the situation and further fosters stability.

g) Organization

The recruitment of civil servants is done in accordance with the provisions in Decree No. 24/2010 / ND - CP of the Government; Circular No. 13/2010 / TT - BNV of the Ministry of the Interior; Decision No. 30/2012 / QD - Committee dated 07.25.2012 of the municipal People's Committee issued the Regulation on the recruitment of civil servants and receive salary for rank appointment as civil servants and the guidance of the Department of the Interior. Civil servants are recruited through the formal entrance examination. There are also some exception cases such as people who graduate with honors or distinctions from national or foreign university, people with bachelor degree who also have experience of 5 years or more working in the sector to be recruited.

The arrangement and use of basic civil servants of proper training professions ; develop the capacity of civil servants forte , guaranteed 100 % new recruits civil servants have a university degree specialized matching job placement and computer skills , foreign language proficiency as required.

The appointment, re-appointment, resignation or dismissal processes are undergoing reforms in a clear oriented and decentralized manner. The competence and responsibility in the appointment, re-appointment as head officer, deputy departments are allocated to the Department of Health head of the medical service units of public execution that matches mechanisms reliance and self-responsibility of the unit to ensure autonomy in organizing activities and promote the dynamism and creativity in performing the functions and tasks of the unit. Through it, reduce the work, which allows Department of Health to concentrate on the planning, policymaking and implementation of inspection, test, and improve the efficiency of state management.

Besides, the Department of Health focuses on strengthening, training of staffs from city health sector meeting the requirement of political tasks of the sector; equipped with knowledge of political theory, state management; thorough knowledge of political mission of the city, new knowledge updates for staffs and members. The scale of training and retraining is expanding rapidly; content and training methods are renewed towards practical innovation.

Enlist the leadership, direction and support from City Party Committee Organization, City Schools Officer, and Department of the Interior in the training and retraining of staffs in Health sector of the city. With this, the organization of healthcare service in the city has been advancing. Not only that, but there is also dramatic increase in quantity as well as quality medical staffs who are well trained with relatively high portion even hold Doctorate, Masters, Specialist level 1, Specialist level 2. Increase frequency and quality of professional training. For instance, in 2013, 21.121 CBCC-VC were sent to attend advanced classes on skills, state management, political theory, foreign languages and informatics.

h) Scientific research and project implementation:

Health department has always prioritized training program and scientific research. Therefore, for the past few years, health department of the city has carried out various scientific researches which are effectively applied in medical treatments and further raise the reputations of the hospital. There is direct command of Health department to Scientific Research Board to carry frequent consolidation and innovation. Furthermore, the selection of reporting topics should be stricter and more diverse. At the same time, scientific research council always maintain professional meetings every week, alternating with training sessions thematic training and coaching. Every year, units under the Department of Health organize assessment and acceptance of scientific research and initiatives. Every year, many hospitals under Health Department successfully organized science and technology conference. Particularly in 2013, the city health sector has approved 237 proposals which are subject to conduct research.

Join Technical Innovation Contest HCMC in 2011 – 2012 launched by the Association of Science and Technology City, the Department of Science and Technology City, Union City Labor Union, The Communist Youth League. The city health department sent 31 topics and solutions to compete. The results were announced in the months of March-April/2013 which include: 1 first prizes, 2 second prizes, 2 third prizes and 6 consolidation prizes.

Programs, projects and schemes implemented in the city are as follows: Plan to implement training of human resources for city health service period from 2011-2015; Plan to develop labor resources from 2020-2025; Plan of Hospitals - Universities, Plan to rotate medical staff. These plans have initially achieved some significant results.

i) International Cooperation

Over the years, the Department of Health has always been putting efforts in strengthening, monitoring and supervising the implementation of international co-operation in the health sector. Particularly, in the year of 2013, Health Department welcomed 331 foreign delegations (equivalent to the same period of 2012) and 1045 passengers (equivalent to the same period in 2012). Among them, 500 are Japanese, 150 are US, 170 are French, 55 are from Britain, 70 are from Australia, and 50 are from Thailand. The rest are guests of countries Switzerland, Sweden, Germany, New Zealand, the Netherlands, Italy, Belgium, Singapore, (Radio Netherlands), China, Malaysia, the Philippines, Cambodia, Israel, South Korea, Bangladesh...

Regarding seminars on science with foreign elements (up 10%), there are 80 professional workshop organized in which are also attended by foreign guests and reporters.

4.2 Sample description

As mentioned above, the questionnaire includes 54 questions divided into 5 parts: Personal information, Physical Environment Quality, Interaction Quality, Patient Satisfaction and Patient loyalty. The below analysis will show the collected information based on indicators of each part. First of all is an overall view about respondents which were surveyed.

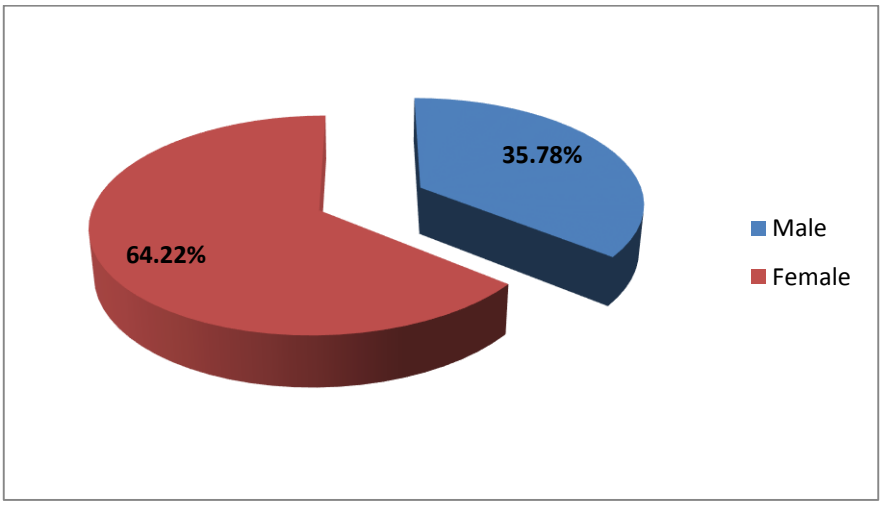

Figure 4.1: Gender of respondents

According to Figure 4.1, 64.22% of respondents are female and 35.78% are male.

The survey results also show that most of the respondents are between 18 and 40 years old (accounting for 61.64%), and 17.46% of the respondents are from 41-50 years old. The percentage of older respondents from 51-60 and above 60 years old is 12.72%, 8.19% respectively.

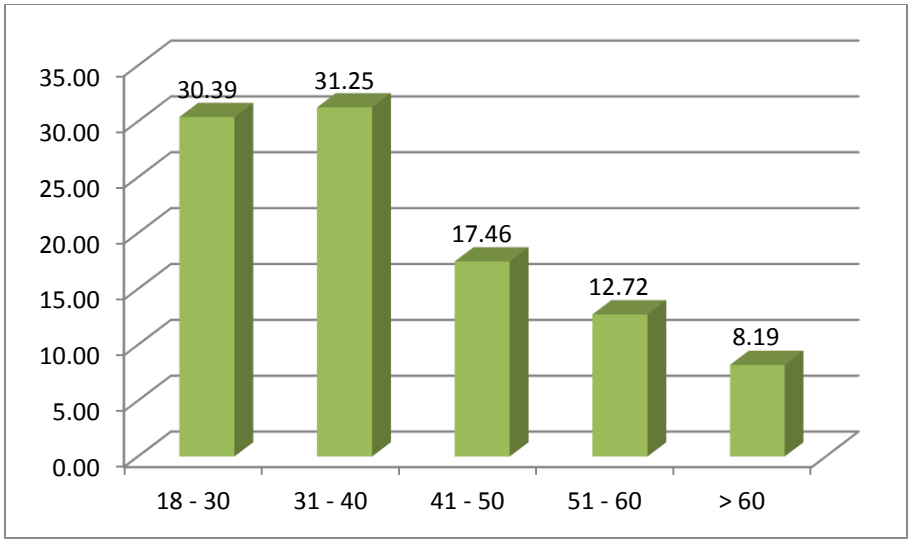

Figure 4.2: Age of respondents

Regarding the educational background of the surveyed customers, the percentage of patients with high school and secondary school background are 44.61% and 30.17% respectively. Patients with under graduate education account for 22.41% and the remaining 2.8% for those patients with master degree.

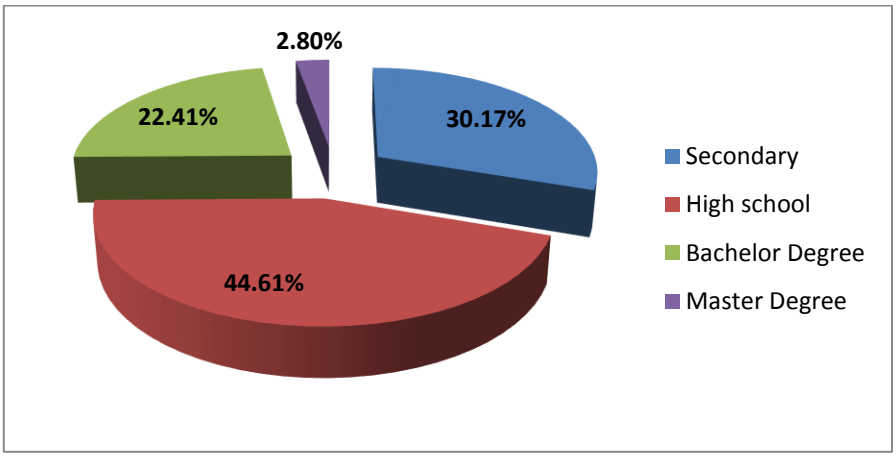

Figure 4.3: Education level of respondents

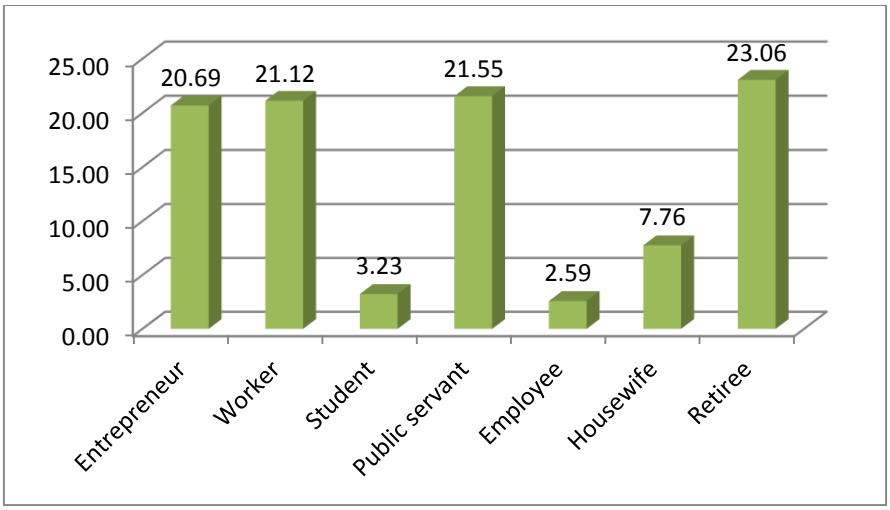

Figure 4.4: Occupation of respondents

The survey results show that the most (23.06%) of patients are retiree; 21.55% of the total surveyed respondents are public servants; patients who work as workers or occupied as entrepreneurs account for 21.12% and 20.69% respectively. Only 7.76% of patients are housewife and 3.23% of them are students. Smallest number (2.59%) of patients is employees.

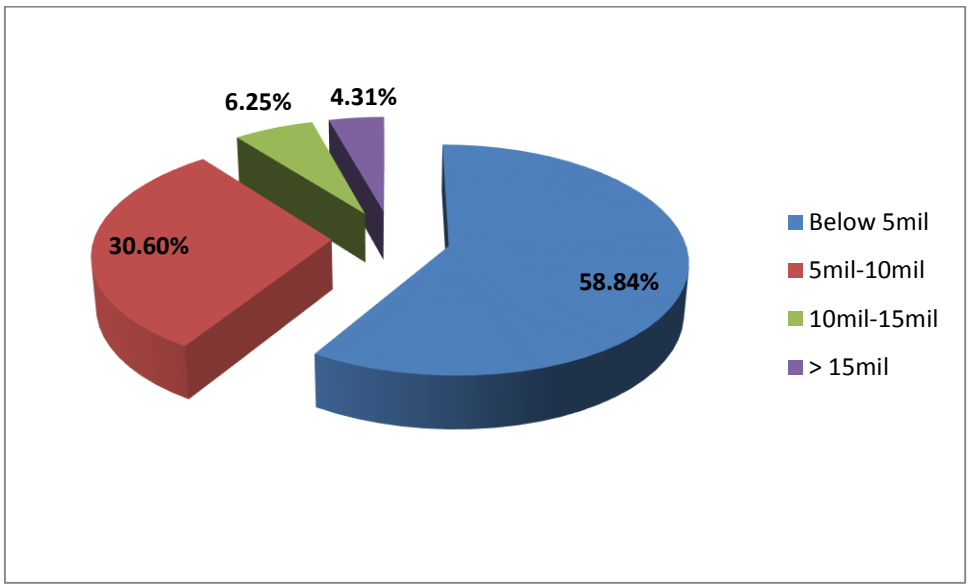

Figure 4.5: Monthly income of respondents

Income could be an important factor that influence customer (patients)'s choice of service and this decision affects their perceived value after using the service.

The highest portion (58.84%) of the customers has low income (less than 5 million VND per month). Customers with average income from 5-10 million VND and 10-15 million VND in this study make up for 30.6% and 6.25% respectively. Customers with higher income (more than 15 million) account only 4.31% of the total number.

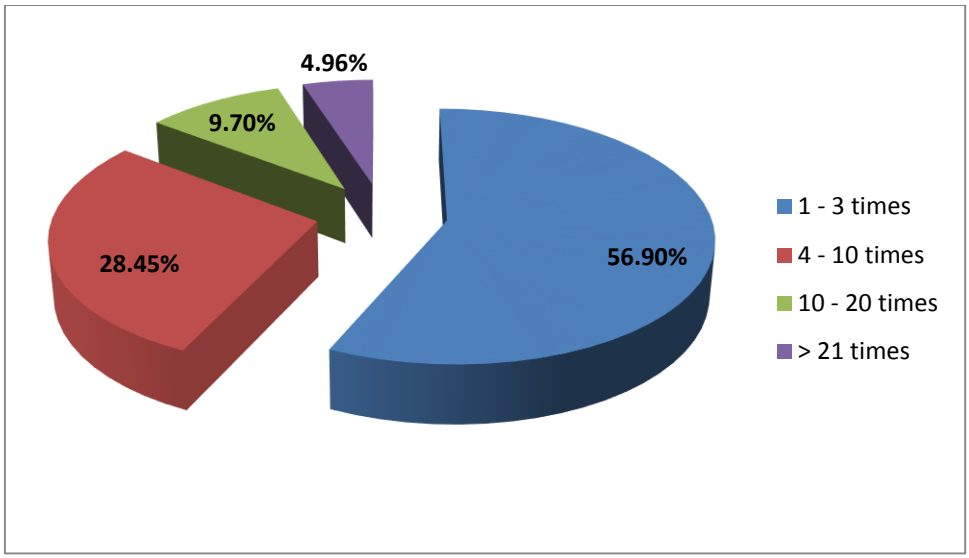

Figure 4.6: Frequency of using health care services at this hospital per year

According to Figure 4.6, most of the patients who use health care service at their hospital 1 – 3 times per year make up a great portion of 56.9%. Patients who go to the hospital 4 – 10 times, 10 – 20 times and more than 21 times per year account for 28.45%, 9.7% and 4.96% respectively.

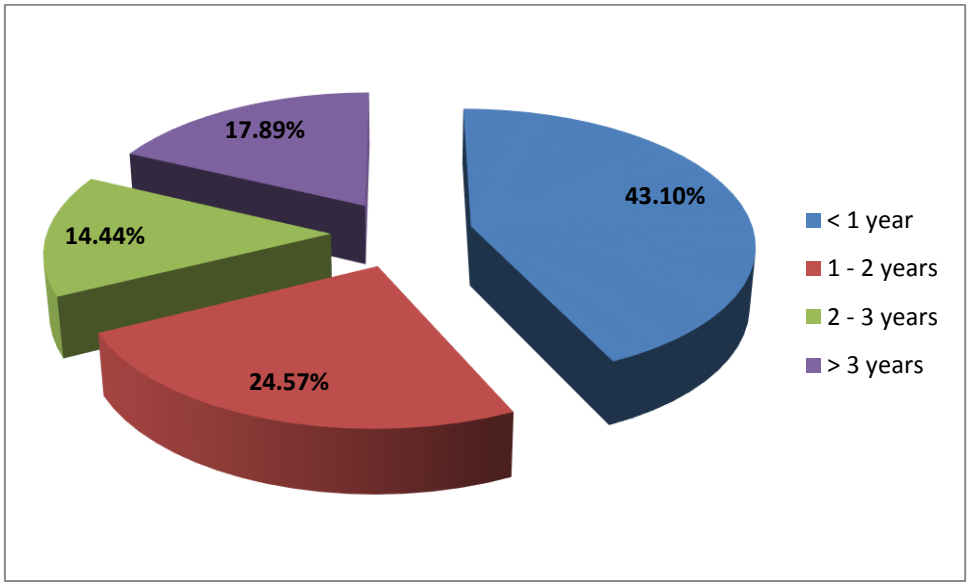

Figure 4.7: Period of using health care services at this hospital

4.3 Descriptive analysis

4.3.1 Descriptive analysis of Physical Environment Quality

In this study, a five-point Likert scale is utilized to measure the physical environment quality in public hospitals in Ho Chi Minh City. “Strongly disagree” was assigned to 1 point, which meant the very poor quality of physical environment. 5 point was the highest score in measuring physical environment quality, meaning the very good quality of physical environment. Moreover the standard deviation was used to measure of dispersion (spread of distribution).

4.3.1.1 Descriptive analysis of Ambient Condition

In order to measure how Ambient condition affects to the patient satisfaction and loyalty, 7 questions were asked and the collected results were as in table 4.2. We can see that nearly half of total respondents (more than 46%) complain about the fresh air and the toilet in the public hospital. It makes very low mean value of these two items. In addition, only 9% of them agree that internal atmosphere in the hospital is well maintained. The four remaining items included overall cleanliness, natural light, outer appearance and wards get a better evaluation (agreement from more than 10% of respondent) but it is still low. Managers of these public hospitals should pay attention to this matter to improve the service quality.

Table 4.2: Descriptive statistic of Ambient condition

No.	AMBIENT CONDITION	**Frequencies** (Number of respondents and percent rate among total)					Mean	Std. Deviation
		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**		
1	Internal atmosphere is well maintained	0	206	216	39	3	2.65	0.659
		0.0%	44.4%	46.6%	8.4%	0.6%		
2	Overall cleanliness of the hospital is excellent	0	213	183	59	9	2.71	0.761
		0.0%	45.9%	39.4%	12.7%	1.9%		
3	Natural light is found in hospital	0	205	189	61	9	2.72	0.760
		0.0%	44.2%	40.7%	13.1%	1.9%		

4	Fresh air is found in the hospital	4	216	178	63	3	2.67	0.742
		0.9%	46.6%	38.4%	13.6%	0.6%		
5	Outer appearance of the hospital is good	0	211	182	59	12	2.72	0.781
		0.0%	45.5%	39.2%	12.7%	2.6%		
6	Toilets are not clean	0	221	201	39	3	2.62	0.665
		0.0%	47.6%	43.3%	8.4%	0.6%		
7	Wards are peaceful	0	214	184	57	9	2.70	0.757
		0.0%	46.1%	39.7%	12.3%	1.9%		

4.3.1.2 Descriptive analysis of Tangibles

One of the most important factors that have an impact on the patient satisfaction is the tangibles of this hospital. To measure how this affects, seven questions were asked and the result was as in the following table.

Table 4.3: Descriptive statistic of Tangibles

No.	**TANGIBLES**	**Frequencies** (Number of respondents and percent rate among total)					**Mean**	**Std. Deviation**
		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**		
1	Waiting rooms are well furnished	38	80	138	145	63	3.24	1.138
		8.2%	17.2%	29.7%	31.2%	13.6%		
2	Operation theatre is well equipped with up-to-date equipments	36	90	166	113	59	3.14	1.112
		7.8%	19.4%	35.8%	24.4%	12.7%		
3	Good technical services are delivered	32	84	162	133	53	3.19	1.079
		6.9%	18.1%	34.9%	28.7%	11.4%		
4	Dustbin and spittoons are provided in the wards	48	88	119	143	66	3.19	1.202
		10.3%	19.0%	25.6%	30.8%	14.2%		

5	Supportive facilities such as public telephone are easy to use	36	87	141	139	61	3.21	1.130
		7.8%	18.8%	30.4%	30.0%	13.1%		
6	Emergency services are very good	44	76	148	133	63	3.20	1.154
		9.5%	16.4%	31.9%	28.7%	13.6%		
7	Medical store is well equipped with required medicines	42	87	130	139	66	3.21	1.172
		9.1%	18.8%	28.0%	30.0%	14.2%		

According to that, more than 40% of total respondents feel satisfied with all items of tangibles variable. There are 45% of respondents agreed that dustbin and spittoons are provided in the wards and waiting rooms are well furnished. However there are still nearly 30% of them did not satisfy with supportive facilities, emergency services, technical services and especially medical store. Most of the patients of this survey complain that their required medicines are often out of stock and it is inconvenient for them to go to the pharmacy outside the hospitals.

4.3.1.3 Descriptive analysis of Social factor

Table 4.4: Descriptive statistic of Social factor

No.	**SOCIAL FACTOR**	**Frequencies** (Number of respondents and percent rate among total)					**Mean**	**Std. Deviation**
		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**		
1	Hospital had good impression of its services on other patients	4	161	184	90	25	2.93	0.888
		0.9%	34.7%	39.7%	19.4%	5.4%		
2	Transparency and ethics in delivery treatments	9	176	174	88	17	2.84	0.877
		1.9%	37.9%	37.5%	19.0%	3.7%		
3	Promotes hygienic life style	0	211	158	68	27	2.80	0.893
		0.0%	45.5%	34.1%	14.7%	5.8%		

4	It provides service to people belonging to all strata of the society	6	175	132	106	45	3.01	1.023
		1.3%	37.7%	28.4%	22.8%	9.7%		
5	It delivers good service at a reasonably minimal cost, but not at the expense of society	6	185	154	95	24	2.88	0.922
		1.3%	39.9%	33.2%	20.5%	5.2%		
6	A sense of public responsibility exists among employees	8	186	138	109	23	2.89	0.945
		1.7%	40.1%	29.7%	23.5%	5.0%		

This table shows statistics of social factor, which is indicator to measure the physical environment quality. There are 32.5% of total respondents agreed that this public hospital offers service to people from all strata of the society that making the highest mean value of this group. Up to 45.5% of them disagreed with the statement "This public hospital promotes hygienic life style". The mean value of this item is also the lowest value of social factor.

4.3.2 Descriptive analysis of Interaction Quality

This study used a five-point Likert scale to measure the interaction quality in public hospitals in Ho Chi Minh City. "Strongly disagree" was assigned to 1 point, which meant the very poor quality of interaction. 5 point was the highest score in measuring interaction quality, meaning the very good quality of interaction. Moreover the standard deviation was used to measure of dispersion (spread of distribution).

The three following constructs has been developed to measure how sensitive doctors/staff are and how they utilize their knowledge and apply skills in reacting to patient concerns and provide appropriate solution.

4.3.2.1 Descriptive analysis of Attitudes and Behavior

Attitudes and behavior of doctors/staffs with patients at public hospital has been evaluated in this statistical table.

Table 4.5: Descriptive statistic of Attitudes and Behavior

No.	ATTITUDE AND BEHAVIOR	**Frequencies** (Number of respondents and percent rate among total)					Mean	Std. Deviation
		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**		
1	Doctors and nurses answer your queries satisfactorily	0	213	183	59	9	2.70	0.761
		0.0%	45.9%	39.4%	12.7%	1.9%		
2	Doctors and nurses are always helpful and supportive	0	205	189	61	9	2.72	0.760
		0.0%	44.2%	40.7%	13.1%	1.9%		
3	Doctors are honest to their profession	4	216	178	63	3	2.66	0.742
		0.9%	46.6%	38.4%	13.6%	0.6%		
4	Doctors paid enough consideration to my concerns in deciding on a medical procedure	0	211	182	59	12	2.72	0.781
		0.0%	45.5%	39.2%	12.7%	2.6%		
5	Nurses treat your friends and relatives very nicely	0	221	201	39	3	2.62	0.665
		0.0%	47.6%	43.3%	8.4%	0.6%		
6	Nurses explain clearly about technical treatment	0	214	184	57	9	2.70	0.757
		0.0%	46.1%	39.7%	12.3%	1.9%		
7	Hospital staff is not generally co-operative	4	197	202	58	3	2.69	0.720
		0.9%	42.5%	43.5%	12.5%	0.6%		

The results presented that nearly half of (from 43.4% to 47.6%) of respondents disagreed with the statements concerning understanding, effort to meet their needs and approachability of doctors and staffs at hospital. Only more than 10% of them agreed with these items. It means that most of respondents dissatisfied with the attitudes and behavior of doctors/staffs at the public hospital. It

shows the actual overloaded situation at the public hospitals now in Vietnam. The doctors/nurses/staffs of these hospitals always have to work in longer time because of having too much patients. It is sensitive matter however the managers should give solutions to improve this matter.

4.3.2.2 Descriptive analysis of Expertise

In the sample, 49.5% of respondents agreed that "Physician always diagnosis the diseases correctly". It is a best result of this group with mean value is quite high at 3.49. However there are still 36% of total respondents said that "Physicians have sufficient knowledge about their field" with lowest mean value of this indicator (mean value = 3.09).

Table 4.6: Descriptive statistic of Expertise

No.	EXPERTISE	**Frequencies** (Number of respondents and percent rate among total)					Mean	Std. Deviation
		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**		
1	Staff is not adequately competent	0	114	182	125	43	3.20	0.918
		0.0%	24.6%	39.2%	26.9%	9.3%		
2	Physicians have the ability to explain logically	4	126	176	127	31	3.11	0.913
		0.9%	27.2%	37.9%	27.4%	6.7%		
3	Physicians have sufficient knowledge about their field	0	167	139	107	51	3.09	1.012
		0.0%	36.0%	30.0%	23.1%	11.0%		
4	Physician always diagnosis the diseases correctly	0	62	172	176	54	3.47	0.866
		0.0%	13.4%	37.1%	37.9%	11.6%		
5	Technical supporting staff are very careful while making tests, administering injections, etc.	4	116	142	160	42	3.25	0.962
		0.9%	25.0%	30.6%	34.5%	9.1%		

4.3.2.3 Descriptive analysis of Process Quality

To measure process quality, seven questions were used. The percentage of patients disagreed and strongly disagreed with these items are very high from 46.7% to 65.5%. It makes the mean value of this indicator lowest among three indicators of interaction quality (from 2.55 to 2.70).

Table 4.7: Descriptive statistic of Process quality

No.	PROCESS QUALITY	Frequencies (Number of respondents and percent rate among total)					Mean	Std. Deviation
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
1	Carrying out the services right at the first time	8	209	174	57	16	2.70	0.834
		1.7%	45.0%	37.5%	12.3%	3.4%		
2	Providing services at specified time	14	229	158	51	12	2.60	0.821
		3.0%	49.4%	34.1%	11.0%	2.6%		
3	Error-free and fast retrieval of documents	0	257	164	31	12	2.56	0.731
		0.0%	55.4%	35.3%	6.7%	2.6%		
4	Telling when services will be performed	12	292	83	33	44	2.57	1.004
		2.6%	62.9%	17.9%	7.1%	9.5%		
5	Prompt provision of medical and non-medical	12	260	125	55	12	2.55	0.831
		2.6%	56.0%	26.9%	11.9%	2.6%		
6	Willingness of personnel to help patients	10	260	115	63	16	2.60	0.873
		2.2%	56.0%	24.8%	13.6%	3.4%		
7	Personnel immediate presence whenever called	0	242	150	44	28	2.69	0.875
		0.0%	52.2%	32.3%	9.5%	6.0%		

4.3.3 Descriptive analysis of Patient Satisfaction

Table 4.8: Descriptive statistic of Patient satisfaction

No.	PATIENT SATISFACTION	Frequencies (Number of respondents and percent rate among total)					Mean	Std. Deviation
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
1	I was cured for my illness	0	206	216	39	3	2.65	0.659
		0.0%	44.4%	46.6%	8.4%	0.6%		
2	The treatment at this hospital is success for me	0	211	182	59	12	2.72	0.781
		0.0%	45.5%	39.2%	12.7%	2.6%		
3	I always visit this hospital for all types of treatments	0	214	184	57	9	2.70	0.757
		0.0%	46.1%	39.7%	12.3%	1.9%		
4	My expectations are fully meet with regard to doctors	0	201	213	44	6	2.68	0.695
		0.0%	43.3%	45.9%	9.5%	1.3%		
5	My expectations are fully meet with regard to nurses	0	170	178	90	26	2.93	0.884
		0.0%	36.6%	38.4%	19.4%	5.6%		

4.3.4 Descriptive analysis of Patient Loyalty

As a related result of previous factors, this constructs display customers' commitment to repeat using the services of hospital treatments and actively recommend about their current hospitals to others. Only 14.6% of them agree that they are willing to reuse the services of hospital treatments. It is not good result. However, there are still a significant number of patients are neither agree nor disagree to commit to use the health care services at public hospitals again and recommend it to others.

Table 4.9: Descriptive statistic of Patient loyalty

No.	PATIENT LOYALTY	Frequencies (Number of respondents and percent rate among total)					Mean	Std. Deviation
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
1	Positive word of mouth about hospital	0	206	216	39	3	2.65	0.659
		0.0%	44.4%	46.6%	8.4%	0.6%		
2	Recommending hospital to others	0	218	204	39	3	2.62	0.664
		0.0%	47.0%	44.0%	8.4%	0.6%		
3	Willingness to reuse the services of hospital treatments	0	197	199	59	9	2.74	0.750
		0.0%	42.5%	42.9%	12.7%	1.9%		

4.4 Reliability analysis

According to Hair (1995), reliability of a variable reflects the extent to which a variable or a set of variables is consistent in what it is intended to measure. To make sure these data after collected are free from error and will be helpful for the research, the reliability test of data is necessary. In order to assess the reliability of the measures in this research, Cronbach's Alpha was employed. According to Nunnally (1978), Cronbach's Alpha scale should be at least 0.7. The Cronbach's Alpha result calculated for each construct as shown in the following tables

4.4.1 Reliability analysis of Physical Environment Quality

4.4.1.1 Ambient condition

Table 4.10: Cronbach's Alpha of Ambient Condition

Cronbach's Alpha	N of Items
.880	7

The Cronbach's Alpha coefficient has the value of 0.880. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3.

Therefore, the scale designed for Ambient Condition is meaningful in statistic and has the necessary reliability.

4.4.1.2 Tangibles

Table 4.11: Cronbach's Alpha of Tangibles

Cronbach's Alpha	N of Items
.928	7

The Cronbach's Alpha coefficient has the value of 0.928. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see Appendix 1). Therefore, the scale designed for Tangibles is meaningful in statistic and has the necessary reliability.

4.4.1.3 Social factor

Table 4.12: Cronbach's Alpha of Social factor

Cronbach's Alpha	N of Items
.880	6

The Cronbach's Alpha coefficient has the value of 0.880. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see Appendix 1). Therefore, the scale designed for Social Factor is relevant in statistic and has the necessary reliability.

4.4.2 Reliability analysis of Interaction Quality

4.4.2.1 Attitudes and behavior

Table 4.13: Cronbach's Alpha of Attitudes and Behavior

Cronbach's Alpha	N of Items
.866	7

The Cronbach's Alpha coefficient has the value of 0.866. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see Appendix 1). Therefore, the scale designed for Attitude and Behavior is meaningful in statistic and has the necessary reliability.

4.4.2.2 Expertise

Table 4.14: Cronbach's Alpha of Expertise

Cronbach's Alpha	N of Items
.840	5

The Cronbach's Alpha coefficient has the value of 0.840. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see Appendix 1). Therefore, the scale designed for Expertise is meaningful in statistic and has the necessary reliability.

4.4.2.1 Process quality

Table 4.15: Cronbach's Alpha of Process quality

Cronbach's Alpha	N of Items
.858	7

The Cronbach's Alpha coefficient has the value of 0.858. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see Appendix 1). Therefore, the scale designed for Expertise is meaningful in statistic and has the necessary reliability.

4.4.3 Reliability analysis of Patient Satisfaction

Table 4.16: Cronbach's Alpha of Patient satisfaction

Cronbach's Alpha	N of Items
.831	5

The Cronbach's Alpha coefficient has the value of 0.831. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see

Appendix 1). Therefore, the scale designed for Patient Satisfaction is meaningful in statistic and has the necessary reliability.

4.4.4 Reliability analysis of Patient Loyalty

Table 4.17: Cronbach's Alpha of Patient loyalty

Cronbach's Alpha	N of Items
.730	3

The Cronbach's Alpha coefficient has the value of 0.730. This value is bigger than 0.7 (Nunnally and Burnstein, 1994). In addition, all Corrected Item-Total Correlation values were over 0.3 (see Appendix 1). Therefore, the scale designed for Patient Loyalty is meaningful in statistic and has the necessary reliability.

4.5 Exploratory Factor Analysis (EFA) analysis

The Exploratory Factor Analysis EFA is used to reduce a set of multiple observed variables which are interdependence with each other into a set of fewer variables so as those variables can be more useful as compared to before. The KMO value (Kaiser-Meyer-Olkin) in the EFA is utilized to test the suitability of Exploratory Factor Analysis. The range of KMO must be from 0.5 to 1 in order to be considered compatible. In the case where the KMO value falls under 0.5, the EFA analysis is said to be inappropriate with the data

Furthermore, the determination of number of factors was based on the analysis of Eigenvalue factor. The definition of eigenvalue can be understood as the amount of variation given by the factors. The usefulness of information greatly depends of the eigenvalue with only the one having eigenvalue larger than 1 being can be retained in the model.

The component matrix and matrix factors when the factors are rotated are the most crucial part of the EFA analysis table. The coefficients contained in the component matrix represent the standardized factor by the components (each variable is a polynomial of factors). Factor loading performing correlation between variables and factors which shows factors and variables can be or can be not interconnect closely with each other. In the studies, extracted method quoted Principal components analysis is used together with Varimax rotation. As such, it is required that the load factor must have weighted factor exceeding 0.5.

Upon completed extraction of components, new components (the value of the total variables) will be saved to form new variables which would be utilized in the next step to analyze the correlation and regression.

Principal Component Analysis with Varimax rotation would be used in the study.

4.5.1 EFA for Physical Environment Quality

- The KMO Coefficient = 0.833 > 0.5: shown this analysis's suggests is appropriate

- In the Barlett's test, the Sig = 0.000 < 5% show that all the observation in EFA have correlation with overall constructs

- EFA result shows 3 extracted factors. All of these factors have Eigenvalue > 1, which shows that all 3 factors are suitable (see Appendix 2).

- The Extraction Sums of Squared Loadings = 64.614% > 50% showed EFA analysis is satisfactory (see Appendix 2). This could be said that the 3 extracted factors explain 64.614% of the data variability.

- The Rotated Component Matrix of all observed variables is shown in Appendix 2. All 20 observed variables have loaded factor > 0.5, therefore these variables are retained and included in the model in order to run Regression Analysis.

Table 4.18: KMO and Bartlett's Test for Physical Environment Quality

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.833**
Bartlett's Test of Sphericity	Approx. Chi-Square	6114.000
	df	190
	Sig.	**.000**

4.5.2 EFA for Interaction Quality

- The KMO Coefficient = 0.813 > 0.5: shown this analysis's suggests is appropriate

- In the Barlett's test, the Sig = 0.000 < 5% show that all the observation in EFA have correlation with overall constructs

- EFA result shows 3 extracted factors (see Appendix 2). All of these factors have Eigenvalue > 1, which shows that all 3 factors are suitable.

- The Extraction Sums of Squared Loadings = 58.877% > 50% showed EFA analysis is satisfactory (see Appendix 2). This could be said that the 3 extracted factors explain 58.877% of the data variability.

- The Rotated Component Matrix of all observed variables is shown in Appendix 2. All 19 observed variables have loaded factor > 0.5, therefore these variables are retained and included in the model in order to run Regression Analysis.

Table 4.19: KMO and Bartlett's Test for Interaction Quality

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.813**
Bartlett's Test of Sphericity	Approx. Chi-Square	4617.754
	df	171
	Sig.	.000

4.5.3 EFA for Patient Satisfaction

- The KMO Coefficient = 0.744 > 0.5: shown this analysis's suggests is appropriate

- In the Barlett's test, the Sig = 0.000 < 5% show that all the observation in EFA have correlation with overall constructs

- EFA result shows 1 extracted factor with Eigenvalue = 3.104 > 1, total variance = **62.082% > 50%** shows that the EFA is acceptable (see Appendix 2).

- The weighted loading factors of the observed variables are all high, higher than 0.5. Thus, the observed variables of this scale satisfactory for further analysis (see Appendix 2).

Table 4.20: KMO and Bartlett's Test for Patient satisfaction

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.744**
Bartlett's Test of Sphericity	Approx. Chi-Square	1240.478
	df	10
	Sig.	.000

4.5.4 EFA for Patient Loyalty

- The KMO Coefficient = 0.574 > 0.5: shown this analysis's suggests is appropriate

- In the Barlett's test, the Sig = 0.000 < 5% show that all the observation in EFA have correlation with overall constructs

- EFA result shows 1 extracted factor with Eigenvalue = 1.970 > 1, total variance = **65.668% > 50%** shows that the EFA is acceptable (see Appendix 2).

- The weighted loading factors of the observed variables are all high, higher than 0.5. Thus, the observed variables of this scale satisfactory for further analysis (see Appendix 2).

Table 4.21: KMO and Bartlett's Test for Patient loyalty

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.574**
Bartlett's Test of Sphericity	Approx. Chi-Square	375.973
	df	3
	Sig.	.000

4.6 Hypothesis testing

The hypotheses relationships between 4 various constructs is examined using linear regression. Pallant (2011) stated that there is a direct relationship between the independent variables and dependents variable. By that, he meant the greater the coefficient that independent variable has, the greater the effect it has on dependent variables. T-value and significance level of each hypothesis is properties of the casual paths which is also included in each standardized path coefficient. The standardized path coefficient shows the relationship between independent variable and dependent variable and also demonstrates how great the impact independent variable has on dependent variable.

According to Sykes (2015), multiple regression is often used to prevent bias. Multiple regression is an analytical technique which allows more than two or three factors at whole to take part on the analysis separately so as to estimate the effect of each factor or variable.

Hypothesis 1 (H1): Physical environment quality has a positive relationship with patient satisfaction in the public hospitals

Table 4.22: Regression analysis of Hypothesis 1

Independent Variable	Dependent Variable (Y_1- Patient satisfaction)				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.317E-016	.019		.000	1.000
X_1 – Tangibles	.042	.019	.042	2.181	**.030**
X_2 – Ambient Condition	.898	.019	.898	46.244	**.000**
X_3 – Social factor	.132	.019	.132	6.785	**.000**
R = 0.909; R^2 = 0.826; Adjusted R^2 = 0.825; F = 729.761; Sig. = 0.000					

R is used as a symbol for coefficient of multiple correlations which measure the association degree among independent and dependent variables. The bond association between independent and dependent variables is considered to be strong when R = 0.090. The Multiple Regression Analysis provides a measure that shows how much of the variation in the dependent variable is explicable by the joint variation in all the explanatory indicators or with each of them. This measure is recorded as coefficient of determination (R2) which is interpreted as the overall explanatory power. From table 22, R2 = 0.826 shows that independent variables explained for 82.6% of the variances in Patient Satisfaction.

The coefficient of determination is then auto adjusted (Adjusted R2). There is a need for adjustment for the inflationary effect in R2 during the computing process in Multiple Regression Analysis in order to prevent over-fitting problem. The adjusted R2 of 0.825 suggests that 82.5% of the variability in Patient Satisfaction is jointly explained by the combined variations of independent factors.

The significance level allows confirmation of the relationship between independent and dependent variables (at 95% confidence, sig. < 0.05). Following that rule, all three variables of Physical Environment Quality factor meet the requirements namely Tangibles (sig. 0.030), Ambient Condition (sig. 0.000), and Social Factor (sig. 0.000).

The F value is 729.761 and significant value is 0.000 (<0.05). This illustrates that physical environment quality does a good job of explaining patient satisfaction. Furthermore, the t value of three variables are from 2.181 to 46.244 (well below -2 and above +2) and significant at 0.000, which indicates that this independent variable is significantly contributing to the equation for predicting dependent variable.

With results obtained from the above analysis, we can say that Hypothesis H1 is confirmed.

The hypothesis H1 can be expressed as the function below:

$$\mathbf{Y_1 = -2.317E\text{-}016 + 0.042\ X_1 + 0.898\ X_2 + 0.132\ X_3}$$

Where: X_1: Tangibles

X_2: Ambient Conditions

X_3: Social factor

Y_1: Patient satisfaction

Hypothesis 2 (H2): Physical environment has a positive relationship with patient loyalty in the public hospitals

Table 4.23: Regression analysis of Hypothesis 2

Independent Variable	**Dependent Variable (Y_2- Patient loyalty)**				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-4.036E-017	.031		.000	1.000
X_1 – Tangibles	.065	.031	.065	2.064	**.040**
X_2 – Ambient Condition	.713	.031	.713	22.770	**.000**
X_3 – Social factor	.188	.031	.188	6.016	**.000**
$R = 0.741$; $R^2 = 0.549$; Adjusted $R^2 = 0.546$; $F = 186.311$; Sig. = 0.000					

According to the table above, R = 0.741 which shows that there is a strong connection between the observed and predicted value of the dependent variable in this case patient loyalty. The R2 of 0.549 indicates 54.9% of the variance in patient loyalty can be forecasted from the physical environment quality components combined. The value of F is at 186.311 and the significance is 0.000 (less than 0.05) shows that the combination of the three factors significantly predicted the patient loyalty.

Nonetheless, the result of multiple regression indicates a positive relationship between Ambient Condition and the patient loyalty. The beta for this is 0.713 (highest among three components of physical environment quality factor) and the p=0.00 which is smaller than 0.05 and suggests that the environment condition is the most sensitive factor affecting patient loyalty in public hospitals in Ho Chi Minh City.

With results obtained from the above analysis, we can say that Hypothesis H2 is confirmed.

The hypothesis H2 can be expressed as the function below:

$$\mathbf{Y_2 = -4.036E\text{-}017 + 0.065\ X_1 + 0.713\ X_2 + 0.188\ X_3}$$

Where: X_1: Tangibles

X_2: Ambient Conditions

X_3: Social factor

Y_2: Patient loyalty

Hypothesis 3 (H3): Interaction quality has a positive relationship with patient satisfaction in the public hospitals

Table 4.24: Regression analysis of Hypothesis 3

Independent Variable	Dependent Variable (Y_1 - Patient satisfaction)				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.176E-016	.023		.000	1.000
X_4 – Attitudes and Behavior	.864	.023	.864	37.552	**.000**
X_5 – Process Quality	.078	.023	.078	3.379	**.001**
X_6 – Expertise	.070	.023	.070	3.055	**.002**
$R = 0.870$; $R^2 = 0.757$; Adjusted $R^2 = 0.755$; $F = 476.967$; Sig. = 0.000					

The result of multiple regression from the above table shows that the R = 0.870, this indicates a very strong relationship between the observed and predicted value of the dependent variable (patient satisfaction). The R2 = 0.757 means that there is up to 75.7% of the variance in patient satisfaction can be predicted from the interaction quality components combined. The value of F is at 476.967 and the significance is 0.000 (less than 0.05) shows that the combination of the three factors significantly predicted the patient satisfaction.

Moreover, the result of multiple regression also demonstrates that there is a positive relationship between the Attitudes and Behavior and the patient loyalty with the Beta equals to 0.864 (highest among three components of interaction quality factor) and the p=0.00<0.05. This means that in public hospitals in Ho Chi Minh City, the attitudes and behavior of staff and doctors is one of the most sensitive factors that affects to the patient satisfaction.

With results obtained from the above analysis, we can say that Hypothesis H3 is confirmed.

The hypothesis H3 can be expressed as the function below:

$$\mathbf{Y_1 = -2.176E\text{-}016 + 0.864\ X_4 + 0.078\ X_5 + 0.070\ X_6}$$

Where: X_4: Attitudes and Behavior

X_5: Process Quality

X_6: Expertise

Y_1: Patient satisfaction

Hypothesis 4 (H4): Interaction quality has a positive relationship with patient loyalty in the public hospitals

Table 4.25: Regression analysis of Hypothesis 4

Independent Variable	Dependent Variable (Y_2- Patient loyalty)				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.513E-017	.034		.000	1.000
X_4 – Attitudes and Behavior	.646	.034	.646	19.055	**.000**
X_5 – Process Quality	.114	.034	.114	3.356	**.001**
X_6 – Expertise	.205	.034	.205	6.058	**.000**
R = 0.687; R^2 = 0.472; Adjusted R^2 = 0.468; F = 137.012; Sig. = 0.000					

The result of multiple regression from the above table shows that the R = 0.687, this indicates a strong relationship between the observed and predicted value of the dependent variable (patient loyalty). The R2 = 0.472 means that there is up to 47.2% of the variance in patient loyalty can be predicted from the interaction quality components combined. The value of F is at 137.012 and the significance is 0.000 (less than 0.05) shows that the combination of the three factors significantly predicted the patient loyalty.

Moreover, the result of multiple regression also demonstrates that the Attitudes and Behavior had a positive relationship with the patient loyalty with the Beta equals to 0.646 (highest among three components of interaction quality factor) and the p=0.00<0.05. This means that in public hospitals in Ho Chi Minh City, the attitudes and behavior of staff and doctors is the most sensitive factor that affects to the patient loyalty.

With results obtained from the above analysis, we can say that Hypothesis H4 is confirmed.

The hypothesis H4 can be expressed as the function below:

$$\mathbf{Y_2 = 1.513E\text{-}017 + 0.646\ X_4 + 0.114\ X_5 + 0.205\ X_6}$$

Where: X_4: Attitudes and Behavior

X_5: Process Quality

X_6: Expertise

Y_2: Patient loyalty

Chapter 5. DISCUSSION AND CONCLUSIONS

5.1 Discussions

The results confirm significant relationship among sub dimensions of physical environment quality and interaction quality (service quality) and two service performance measures: patient satisfaction, patient loyalty. Some factors that reflect the satisfaction – loyalty connection in the public health services are accessibility and lack of decent private healthcare services. Acquirement of long-term patient satisfaction and loyalty can be made possible with continuous monitoring of interaction quality and physical environment quality. The quality of interpersonal interactions has important implications given the high costs of non-compliance as well as its pervasiveness. In other words, improved physician patient interactions contribute to improving living standard of patients which is particularly applicable to elderly patients. Academically, not only high credence services like health care but also for other low credence services like shopping malls, hotels, etc… are affected by the explanatory ability of service quality–service performance model.

5.2 Recommendations

In order to achieve aforementioned missions, in the course of performing tasks, Health Department identifies some important measures as follows:

Continue to learn after our role model – president Ho Chi Minh. Place a strong emphasis on following code of conduct in public organization to improve the attitude of health workers towards patients and their relatives. Code of conduct imposed by ministry of health should be practiced on daily basis for organization under health department. In addition, frequent inspection and assessment of this task should be carried out often.

More attention paid to reward system, education as well as dissemination of medical ethics among medical members. Role model with excellent performance should be credited.

Supervise the implementation of code of conduct of individual medical staff to patients when they come to medical facility.

Continue to strengthen, consolidate and develop the health network, especially in the area of district hospitals and medical stations and preventive healthcare service. Taking a

proactive role in monitoring and detecting epidemiology so as to prevent big epidemics especially emerging diseases…

Implement effectively health program in the city as well as nationalwide. Run more programs focusing on reproductive healthcare and health of elderly. Encourage proactive prevention of non-contagious diseases, or diseases due to non-healthy lifestyle.

Coordinate with other departments to tighten the control of food safety and also the conservation of environment. Increase effort in promotion of quality management, food safety. Also, more attention to be placed on supervision of food contamination as well as food poisoning.

Continue to come up with measures to tackle the problem of overcrowding in hospitals especially specilized hospitals. Effectively utilize the program aiming at enhancing quality of healthcare and hospital condition especially in

Stricter monitoring of healthcare operation especially in private sector, consumption and prescription of drugs. In addition, abuse of drug and unneccessary usage of testing and high-tech services should be cut down because they are costly and yet generate no benefictial impact on the health of patients. Continue to further advance the quality of healthcare in area of traditional medicine. Encourage development of traditional medicines and herbs so as to integrate both modern and traditional medical method in treatment of diseases.

Ensure that there are adequate essential drugs for treatment services. Carry out more measuresto stabilize the price, circulation as well as the supplies of drugs. Tighten the control of the procurement, consumption, price and also the quality of medicine. Upgrade management system for retail and wholesale pharmaceuticals in the city in which the private phamarcy must be qualified under GPP standard for retailer and GDP standard for wholesalers. Also, the distribution of drugs must follow the schedule set out by ministry of health.

Develop process to shorten the time spent on reception, examination , admission , discharge, patient referral as well as treatment procedures so as to ultimately cut down overall treatment time.

Put macro-solutions into operation aiming to reduce overloading in upline hospitals. City hospital should focus on training and transferring of technology according to “synchronous, on-site” method.

Strengthen the cooperation between hospitals. Proactive staff rotation schemes the scheme of Family Physicians, hospital model satellites, scientific satellites as well as satellite clinics.

Continue to invest in developing specialize health system. These investment could be on area such as facilities and infrastructures of specilized as well as general hospital to improve the quality of healthcare service.

Increase investment in infrastructure, equipment and training to serve the health workforce; expand trainings to ensure sufficient human resources for health facilities in the near future. Focus on intensive training to enhance management skills and also to meet increasing technical requirements and transferring of technology. Carry on expansion of technology transference from the upper level to the lower level to improve the quality of treatment which subsequently contributes to reduction of overcrowding in upline hospitals.

Stepping up the state management of health. Increase integration of information technology in managing, operating process as well as developing a electronic healthcare service.

Implement administrative reform as well as come up with solutions to combat problem of wastage.

5.3 Managerial and Research implications

Improvement in service quality and performance the relationship in hospitals can be achieved through the implementation of the aforementioned strategies. The implications of the study from research/theoretical and managerial perspectives are discussed as follows

5.3.1 Research/Theoretical implication

The integrated approach with emphasis on physical environment quality and interaction quality and their impact on outcome quality (including satisfaction and loyalty) contributes to the service marketing literature. The study also analyzed various sub dimensions of service quality and performance dimensions, which facilitates the understanding of service quality and performance relationship in health-care sector. Due to its acceptance in developing and developed countries, the cross-border research work in the health-care sector is suggested.

5.3.2 Managerial implication

Improvement of service performance measures such as satisfaction and image is aided with this study. The hospital authorities' abilities to understand problems of patients are negatively obstructed by tight schedule and massive workload. The appropriate focus on tangibles (physical environment quality) and attitude and behavior (interaction quality) provide guidelines for the providers to enhance service quality. Furthermore, the suggested strategic actions can be used as a guideline to improve service quality and performance.

5.4 Research limitations and implication for future research

Service quality and service performances in public health sector are examined in this study. There is authentication shows presence of continuous downgrading in service quality in the public health-care sector (Chahal, 2009; Chahal et al., 2004; Sardana, 2003). Therefore, there is a need for sufficient steps on the part of public healthcare organizations to ensure that they meet at least the expectation of patients.

Due to various reasons such as the respondents' lack of reliable information about the service quality dimension as well as inconsistent answer from respondents, the information obtained can be very subjective. Despite that, validity and reliability results suggest fairness and objectivity of the responses. In future, outpatients should also be included in the study for better understanding as currently hospital service performance and service quality are measured only based on inpatients' views. As the research main focus is on consumer, perspectives of physicians, medical assistants, nurses, technicians, laboratory assistants, and menial staff are not considered. It is necessary to measure service quality based on both employee perspectives and patients' perspectives in future. Another limitation of this research is that the regression models do not contain many controlling variables which could be used to further examine the hypotheses. Last but not least, another limitation is the cross-sectional design of the research. This is due to the fact that all service quality and performance measures were collected at a single point of time. A longitudinal study is required to establish the causal relationships between service quality and service performance measures. Furthermore, it is extremely important that the impact of certain mediating and moderating variables, such as value and demographic characteristics are considered so as to understand the concept from wider perceptions. For future studies, there is also suggestion for development of service quality which is to do it as a formative construct rather than as a reflective construct.

REFERENCES

Al-Hawary, S.I., Alghanim, S.A. and Mohammad, A.M. (2011), "Quality level of health care service provided by King Abdullah educational hospital from patient's viewpoint", Interdisciplinary Journal of Contemporary Research in Business, Vol. 2 No. 11, pp. 552-572.

Al-Hawary, S.I.S. (2012), "Health care services quality at private hospitals, from patients' perspective: a comparative study between Jordan and Saudi Arabia", African Journal of Business Management, Vol. 6 No. 22, pp. 6516-6529.

Ali, M. M. (2013). Healthcare service quality: Towards a broad definition. International Journal of Health Care Quality Assurance, 26(3), 203-19. doi:http://dx.doi.org/10.1108/09526861311311409

Anderson, E. A., & Zwelling, L. A. (1996). Measuring service quality at the University of Texas M. D. Anderson Cancer Center. International Journal of Health Care Quality Assurance, 9(7), 9–22.

Arasli, H., Ekiz, EH. and Katircioglu, ST. (2008).Gearing service quality into public and private hospitals in small islands: empirical evidence from Cyprus. Int J Health Care Qual Assur, 21(1):8-23.

Ariffin, A.A.M. and Aziz, N.A. (2008), "Determining the service quality dimensions and zone of tolerance for hospital services in Malaysia", The Business Review, Vol. 10 No. 2, pp. 164-169.

Auh, S., & Johnson, M. D. (2005). Compatibility effects in evaluation of satisfaction and loyalty. Journal of Economic Psychology, 26, 35–57.

Baldwin, A., & Sohal, A. (2003). Service quality factors and outcomes in dental care. Managing Service Quality, 13, 207–216.

Bellou, V., & Thanopoulos, J. (2006). Enhancing service quality in a hospital setting. Review of Business, 27(1), 26-32. Retrieved from http://search.proquest.com/docview/220955807?accountid=63189.

Bitner, M. J. (1992). Evaluating service encounters: The effects of physical surrounding and employee responses. Journal of Marketing, 54(2), 69–81.

Brady, M. K., & Cronin, J. J. (2001, July). Some new thoughts on conceptualizing perceived service quality: A hierarchical approach. Journal of Marketing, 65, 34–49.

Buttle, F. (1996), "SERVQUAL: review, critique, research agenda", European Journal of Marketing, Vol. 30 No.1, pp. 8-32.

Camilleri, D., & Callaghan, M. O. (1998). Comparing public and private hospital care service quality. Journal of Marketing, 11(4), 127–133.

Chahal, H. (2009). Predicting patient loyalty and service quality relationship-a case study of civil hospital. Ahmedabad, Vision, 12(4), 45–55.

Chahal, H., & Kumari, N. (2010). Development of multidimensional scale for healthcare service quality (HCSQ) in Indian context. Journal of Indian Business Research, 2(4), 230-255. doi:http://dx.doi.org/10.1108/17554191011084157

Chahal, H., & Sharma, R. D. (2004). Managing health care service quality in a primary health care centre. Metamorphosis, 3(2), 112–131.

Chahal, H., Sharma, R. D., & Gupta, M. (2004). Patient satisfaction in public outpatient health care services. The Journal of Health Management, 6(1), 23–45.

Choi, K.-S., Lee, H., Kim, C., & Lee, S. (2004). The relationship among quality, value, satisfaction and behavioral intention in health care provider choice: A South Korean study. Journal of Business Research, 57, 913–921.

Choi, K.-S., Lee, H., Kim, C., & Lee, S. (2005). The service quality dimensions and patient satisfaction relationships in South Korea: Across gender, age and type of service. Journal of Service Marketing, 19(3), 140–149.

Conway, T., & Willcocks, S. (1997). The role of expectations in the perception of health care quality developing a conceptual model. International Journal of Health Care Quality Assurance, 10(3), 131–140.

Corbin, C. L., Kelley, S. W., & Schwartz, R. W. (2001). Concepts in service marketing for healthcare professionals. The American Journal of Surgery, 181, 1–7.

Curry, A., & Sinclair, E. (2002). Assessing the quality of physiotherapy services using SERVQUAL. International Journal of Health Care Quality Assurance, 15(5),197–205.

Dabholkar, P. A., Thorpe, D. I., & Rentz, J. O. (1996). A measurement of service quality for retail stores: Scale development and validation. Journal of the Academy of Marketing Science, 24, 3–16.

Dagger, T. S., Sweeney, J. C., & Johnson, L. W. (2007). A hierarchical model of health service quality: Scale development and investigation of an integrated model. Journal of Service Research, 10(2), 123–142.

Dedeke, A. (2003). Service quality: A fulfillment-oriented and interactions-centered approach. Managing Service Quality, 13, 276–289.

Donabedian, A. (1996). The effectiveness of quality assurance. International Journal for Quality in Health Care, 8, 401–407.

Dotchin, J. A., & Oakland, J. S. (1993). Total quality management in service. International Journal of Quality and Management, 11(3), 27–42.

Duggirala, M., Rajendran, C. and Anantharaman, R.N. (2008), "Patient-perceived dimensions of total quality service in healthcare", Benchmarking: An International Journal, Vol. 15 No. 5, pp. 560-583.

Fen, Y. S. & Meillian, K. (2005). Service quality and customer satisfaction: Antecedents of customer's re-patronage, Sunway Academic Journal. Vol. 4, p.59-60.

Garvin, D. A. (1983). Quality on the line. Harvard Business Review, 61(4), 64–75. Gronroos, C. (1984). A service quality model and its marketing implications. European Journal of Marketing, 18(4), 36–44.

Gi-Du Kang. (2006). The hierarchical structure of service quality: Integration of technical and functional quality. Managing Service Quality, 16(1), 37-50. Retrieved from http://search.proquest.com/docview/198141501?accountid=63189

Gross, R. (2003). A consumer based tool for evaluating the quality of health services in the Israeli health care system following reform. Health Policy, 68, 143–158.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2003). Multivariate data analysis. Delhi, India: Pearson Education.

Haksever, C., Render, B., Russell, R., & Murdick, R. (2000). Service management and operations (2nd ed.). NJ: Prentice Hall.

Harris, L. C., & Goode, M. H. (2004). The four levels of loyalty and the pivotal role of trust: A study of online service dynamics. Journal of Retailing, 80, 139–158.

Hedvall, M.B. and Paltschik, M. (1990s) in Avlonitis, G.J. (Ed.), "An investigation in, and generation of service quality concepts", Marketing Thought and Practice in the 1990s, European Marketing Academy, Athens, pp. 473-483.

International Journal of Health Care Quality Assurance, Vol. 24 No. 1, pp. 57-66.

Jain, S. K., & Gupta, G. (2004). Measuring service quality: SERVQUAL vs. SERVPERF scales. Vikalpa, 29(2), 25–37.

Journal of Marketing Research, Vol. 17 No. 4, pp. 460-469.

Kang, G.-D., & Jeffrey, J. (2004). Service quality dimensions: An examination of Gronroos service quality model. Managing Service Quality, 14, 266–277. Kristensen, K. (1998). Some aspects of customer satisfaction and customer loyalty. Total Quality Management, 45, 145–151.

Lee, H., Lee, Y. & Yoo, D. (2000). The determinants of perceived service quality and its relationship with satisfaction, Journal of Service Marketing, Vol. 14, Number 3, p226.

Lehtinen, U., & Lehtinen, J. R. (1982). Service quality: A study of quality dimensions. Helsinki, Finland: Service Management Institute.

Lewis, B.R. (1993), "Service quality measurement", Marketing Intelligence & Planning, Vol. 11 No. 4, pp. 4-12.

Lewis, R. C., & Booms, B. H. (1983). The marketing aspects of service quality in emerging perspectives on service marketing. American Marketing, 56, 99–107.

Lovelock, C. (1981). Why marketing management needs to be different for services. In J. Donnelly & W. George (Eds.), Marketing of services (pp. 5–9). Chicago, IL: American Marketing Association.

Magi, A. & Julander, C. R. (1996). Perceived service quality and customer satisfaction in a store performance framework. An empirical study of Swedish grocery retailers, Journal of Retailing and consumer services, Vol. 3, Number 1 p.33-41.

Malhotra, N. K. (2003). Marketing research - an applied orientation. Delhi, India: Pearson Education.

Mart´ın-Consuegra, D., Molina, A., & Esteban, A´. (2007). An integrated model of price, satisfaction and loyalty: An empirical analysis in the service sector. Journal of Product & Brand Management, 16(7), 459–468.

Negi, R. (2009). Determining customer satisfaction through perceived service quality: A study of Ethiopian mobile users, International Journal of Mobile Marketing; Vol.4, Number 1; p.31-38.

Nekoei-Monghadam, M. and Amiresmaili, M. (2011), "Hospital services quality assessment",

Newman, K., & Pyne, T. (1996). Quality matters: Junior doctors' perceptions. Journal of Management in Medicine, 10(4), 12–23.

Nwankwo, S., Frimpong, N.O. and Dason, B. (2010), "Measuring service quality and patient satisfaction with access to public and private healthcare delivery", International Journal of Public Sector Management, Vol. 23 No. 3, pp. 203-220.

Oliver, R.L. (1980), "A cognitive model of antecedents and consequence of satisfaction decisions",

Overveit, J. (1997). A comparison of hospital quality programmes: Lessons for other services. International Journal of Service Industry Management, 8(3), 220–235.

Panda, T. K., & Das, S. (2014). The role of tangibility in service quality and its impact on external customer satisfaction: A comparative study of hospital and hospitality sectors. IUP Journal of Marketing Management, 13(4), 53-69. Retrieved from http://search.proquest.com/docview/1634001369?accountid=63189.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implication for future research. Journal of Marketing, 49, 41–50.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multi-item scale for measuring consumer perceptions of the service quality. Journal of Retailing, 64(1), 12–40.

Quader, M.S. (2009), "Manager and patient perceptions of a quality outpatient service: measuring the gap", Journal of Services Research, Vol. 9 No. 1, pp. 109-137.

Raftopoulous, V. (2005). A grounded theory for patients' satisfaction with quality of hospital care. ICUs and Nursing Web Journal, 22, 1–15.

Reeves, C.A. and Bednar, D.A. (1994), "Defining quality: alternatives and implications", Academy of Management Review, Vol. 19 No. 4, pp. 419-445.

Rohini, R. and Mahadevappa, B. (2006), "Service quality in Bangalore hospitals: an empirical study", Journal of Services Research, Vol. 6 No. 1, pp. 59-84.

Rust, R. T., & Oliver, R. L. (1994). Service quality: Insights and managerial implications from the frontlines. In R. T. Rust & R. L. Oliver (Eds.), Service quality: New direc- tions in theory and practice (pp. 1–19). Thousand Oaks, CA: Sage.

Ruyter, K., Wetzels, M., & Bloemer, J. (1998). On the relationship between perceived service qualities, service loyalty and switching costs. International Journal of Service Industry Management, 9(5), 436–453.

Saravanan, R. & Rao, K. S. P. (2007). Measurement of service quality from the customer's perspective – An empirical study, Total Quality Management, Vol. 18. No. 4, p.436.

Sardana, G. D. (2003). Performance grading of hospitals: A conceptual framework. Productivity, 44, 450–465.

Sharma, R. D., & Chahal, H. (1995). Patient satisfaction in public health system-A case study. The Indian Journal of Social Work, 61(4), 445–456.

Sheetal, B.S. and Harsh, V.V. (2004), "Relative importance of service quality dimensions: a multisectoral study", Journal of Services Research, Vol. 4 No. 1, pp. 93-116.

Suki, N.M., Lian, J.C.C. and Suki, N.M. (2011), "Do patients' perceptions exceed their expectations in private healthcare settings"? International Journal of Health Care Quality Assurrance, Vol. 24 No. 1, pp. 42-56.

Sureshchandar, G.S, Rajendran, C. and Anantharaman, R.N. (2002) "The relationship between service quality and customer satisfaction – a factor specific approach", Journal of Services Marketing, Vol. 16 Iss: 4, pp.363 – 379.

Tull, D. S., & Del, L. H. (2005). Marketing research—measurement and methods (6th ed.). New Delhi, India: Printing Hall of India.

Vyas, P. H., & Thakkar, P. D. (2005). Market performance analysis and measurement of patients' satisfaction in health care services. Indian Journal of Commerce, 58(1), 151–161.

Wisniewski, M. and Wisniewski, H. (2005), "Measuring service quality in a hospital colposcopy clinic", International Journal of Health Care Quality Assurance, Vol. 18 Nos 2/3, pp. 217-228.

Yousapronpaiboon, K., & Johnson, W. C. (2013). Measuring hospital out-patient service quality in thailand. Leadership in Health Services, 26(4), 338-355. doi:http://dx.doi.org/10.1108/LHS-07-2012-0023.

Zaim, H., Bayyurt, N. and Zaim, S. (2010), "Service quality and determinants of customer satisfaction in hospitals: Turkish experience", The International Business and Economics Research Journal, Vol. 9 No. 5, pp. 51-58.

Zarei, A., Arab, M., Froushani, A., Rashidian, A. and Tabatabaei, S. (2012), "Service quality of private hospitals: the Iranian patients' perspective", BMC Health Services Research, Vol. 12 No. 31.

Internal report of Ho Chi Minh City People's Committee, 6-2015.

Internal report of hotline of the Department of Health of Ho Chi Minh City, 4-2015.

World Bank national accounts data, and OECD National Accounts data files, 2015. Retrieved from http://data.worldbank.org/indicator/NY.GDP.PCAP.CD

World Health Organization Global Health Expenditure database,le 2013.

http://www.academicjournals.org/article/article1380372935_Rasli%20et%20al.pdf

Appendix 1: QUESTIONNAIRE

Dear Sir/Madam,

My name is Tran Thi Hong Huyen, studying at University of Economics HCMC. I am conducting a research about topic **"Service Quality and Patient satisfaction & loyalty in public hospitals in Ho Chi Minh City"**. For this purpose, I kindly request you to complete the following short questions. It should take you no longer than 15 minutes to finish this questionnaire. I assure that your personal information will be kept confidentially and not be disclosed without your permission. If you have concerns or questions about this study, please contact me with email address: tranthihonghuyen@gmail.com

PART A: PERSONAL INFORMATION

(Please tick the appropriate box below)

1. Gender: ☐ Male ☐ Female ☐ Others

2. Your current age:

☐ 18 - 30 ☐ 31 – 40 ☐ 41 – 50

☐ 51 – 60 ☐ > 60

3. Education level:

☐ Secondary ☐ High school ☐ Bachelor Degree

☐ Master Degree ☐ Doctor Degree

4. Your occupation:

☐ Entrepreneur ☐ Worker ☐ Student

☐ Public servant ☐ Employee ☐ Housewife

☐ Retiree ☐ Others

5. Your gross monthly income:

☐ Below 5,000,000 ☐ 5,000,000 – 10,000,000

☐ 10,000,000 – 15,000,000 ☐ Over 15,000,000

6. Frequency of using health care services at this hospital per year:

☐ 1 – 3 times ☐ 4 – 10 times ☐ 10 – 20 times ☐ More than 21 times

7. Period of using health care services at this hospital:

☐ Less than 1 year ☐ 1 – 2 years ☐ 2 – 3 years ☐ Over 3 years

PART B: PHYSICAL ENVIRONMENT QUALITY

Please circle one number to indicate your agreement on each statement:

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
AMBIENT CONDITION					
1. Internal atmosphere is well maintained	1	2	3	4	5
2. Overall cleanliness of the hospital is excellent	1	2	3	4	5
3. Natural light is found in hospital	1	2	3	4	5
4. Fresh air is not found in the hospital	1	2	3	4	5
5. Outer appearance of the hospital is good	1	2	3	4	5
6. Toilets are not clean	1	2	3	4	5

7. Wards are peaceful	1	2	3	4	5
TANGIBLES					
1. Waiting rooms are well furnished	1	2	3	4	5
2. Operation theatre is well equipped with up-to-date equipments	1	2	3	4	5
3. Good technical services are delivered	1	2	3	4	5
4. Dustbin and spittoons are provided in the wards	1	2	3	4	5
5. Supportive facilities such as public telephone are easy to use	1	2	3	4	5
6. Emergency services are very good	1	2	3	4	5
7. Medical store is well equipped with required medicines	1	2	3	4	5
SOCIAL FACTOR					
1. Hospital had good impression of its services on other patients	1	2	3	4	5
2. Transparency and ethics in delivery treatments	1	2	3	4	5
3. Promotes hygienic life style	1	2	3	4	5
4. It provides service to people belonging to all strata of the society	1	2	3	4	5
5. It delivers good service at a reasonably minimal cost, but not at the expense of society	1	2	3	4	5
6. A sense of public responsibility exists among employees	1	2	3	4	5

PART C: INTERACTION QUALITY

Please circle one number to indicate your agreement on each statement:

1	2	3	4	5

Strongly disagree	Neutral	Strongly agree

ATTITUDE AND BEHAVIOR	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Doctors and nurses answer your queries satisfactorily	1	2	3	4	5
2. Doctors and nurses are always helpful and supportive	1	2	3	4	5
3. Doctors are honest to their profession	1	2	3	4	5
4. Doctors paid enough consideration to my concerns in deciding on a medical procedure	1	2	3	4	5
5. Nurses treat your friends and relatives very nicely	1	2	3	4	5
6. Nurses explain clearly about technical treatment	1	2	3	4	5
7. Hospital staff is not generally co-operative	1	2	3	4	5
EXPERTISE					
1. Staff is not adequately competent	1	2	3	4	5
2. Physicians have the ability to explain logically	1	2	3	4	5
3. Physicians have sufficient knowledge about their field	1	2	3	4	5
4. Physician always diagnosis the diseases correctly	1	2	3	4	5
5. Technical supporting staff are very careful while making tests, administering injections, etc	1	2	3	4	5
PROCESS QUALITY					
1. Carrying out the services right at the first time	1	2	3	4	5
2. Providing services at specified time	1	2	3	4	5
3. Error-free and fast retrieval of documents	1	2	3	4	5
4. Telling when services will be performed	1	2	3	4	5

5. Prompt provision of medical and non-medical services	1	2	3	4	5
6. Willingness of personnel to help patients	1	2	3	4	5
7. Personnel immediate presence whenever called	1	2	3	4	5

PART D: PATIENT SATISFACTION

Please circle one number to indicate your agreement on each statement:

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

PATIENT SATISFACTION	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1. I was cured for my illness	1	2	3	4	5
2. The treatment at this hospital is success for me	1	2	3	4	5
3. I always visit this hospital for all types of treatments	1	2	3	4	5
4. My expectations are fully meet with regard to doctors	1	2	3	4	5
5. My expectations are fully meet with regard to nurses	1	2	3	4	5

PART E: PATIENT LOYALTY

Please circle one number to indicate your agreement on each statement:

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

PATIENT LOYALTY	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Positive word of mouth about hospital	1	2	3	4	5
2. Recommending hospital to others	1	2	3	4	5
3. Willingness to reuse the services of hospital treatments	1	2	3	4	5

Thank you very much for having taken the time to complete this questionnaire!

Appendix 2: Reliability Analysis

Item-Total Statistics of Ambient Condition

Ambient condition	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BI.1	16.1466	11.732	.699	.859
BI.2	16.0927	11.199	.696	.858
BI.3	16.0711	11.911	.540	.878
BI.4	16.1336	11.308	.694	.858
BI.5	16.0754	11.232	.664	.862
BI.6	16.1789	11.672	.705	.858
BI.7	16.0991	11.329	.671	.861

Item-Total Statistics of Tangibles

Tangibles	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BII.1	19.1810	31.734	.898	.904
BII.2	19.2802	32.228	.878	.906
BII.3	19.2328	34.296	.720	.921
BII.4	19.2328	33.121	.722	.922
BII.5	19.2091	33.341	.761	.917
BII.6	19.2241	33.963	.688	.925
BII.7	19.2134	33.231	.736	.920

Item-Total Statistics of Social factor

Social factor	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BIII.1	14.4547	13.838	.710	.856
BIII.2	14.5474	13.773	.733	.852
BIII.3	14.5841	13.738	.722	.854
BIII.4	14.3728	14.100	.543	.886
BIII.5	14.5086	13.119	.801	.840
BIII.6	14.4935	13.857	.648	.866

Item-Total Statistics of Attitudes and Behavior

Attitudes and Behavior	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted

CI.1	16.1358	10.861	.698	.838
CI.2	16.1142	11.704	.511	.864
CI.3	16.1767	10.772	.742	.832
CI.4	16.1185	10.891	.667	.843
CI.5	16.2220	11.516	.660	.845
CI.6	16.1422	11.081	.652	.845
CI.7	16.1466	11.732	.545	.859

Item-Total Statistics of Expertise

Expertise	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CII.1	12.9461	8.630	.721	.787
CII.2	13.0366	8.493	.758	.777
CII.3	13.0647	8.281	.697	.793
CII.4	12.6767	9.848	.509	.842
CII.5	12.8966	9.229	.549	.834

Item-Total Statistics of Process quality

Process quality	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CIII.1	15.6056	14.883	.599	.842
CIII.2	15.7047	14.403	.698	.828
CIII.3	15.7478	14.608	.767	.822
CIII.4	15.7328	14.179	.561	.851
CIII.5	15.7543	15.166	.552	.848
CIII.6	15.7112	15.096	.527	.852
CIII.7	15.6185	13.969	.718	.825

Item-Total Statistics of Patient satisfaction

Patient satisfaction	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
DI.1	11.0517	5.950	.691	.784
DI.2	10.9806	6.162	.473	.841
DI.3	11.0043	5.274	.793	.749
DI.4	11.0172	5.658	.745	.768
DI.5	10.7651	5.657	.515	.838

Item-Total Statistics of Patient loyalty

Patient loyalty	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
EI.1	5.3685	1.292	.719	.443
EI.2	5.3944	1.604	.450	.756
EI.3	5.2802	1.347	.512	.699

Appendix 3: Exploratory Factor Analysis

Total Variance Explained for Physical Environment Quality

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.966	24.828	24.828	4.966	24.828	24.828	4.943	24.715	24.715
2	4.189	20.945	45.772	4.189	20.945	45.772	4.143	20.716	45.431
3	3.768	18.842	64.614	3.768	18.842	64.614	3.837	19.183	**64.614**
4	.960	4.802	69.417						
5	.728	3.640	73.057						
6	.663	3.317	76.374						
7	.629	3.143	79.518						
8	.554	2.771	82.288						
9	.532	2.660	84.948						
10	.485	2.426	87.374						
11	.442	2.212	89.586						
12	.366	1.832	91.418						
13	.299	1.494	92.913						
14	.285	1.426	94.338						
15	.264	1.318	95.656						
16	.242	1.210	96.866						
17	.234	1.172	98.037						
18	.148	.742	98.779						
19	.133	.663	99.442						
20	.112	.558	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a] for Physical Environment Quality

	Component		
	1	2	3
BII.1	.931		
BII.2	.919		
BII.5	.827		
BII.7	.807		
BII.3	.797		
BII.4	.795		
BII.6	.771		
BI.6		.793	

BI.1		.791	
BI.2		.786	
BI.4		.784	
BI.7		.776	
BI.5		.763	
BI.3		.653	
BIII.5			.873
BIII.2			.824
BIII.3			.821
BIII.1			.820
BIII.6			.758
BIII.4			.662

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Total Variance Explained for Interaction Quality

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.717	24.825	24.825	4.717	24.825	24.825	4.012	21.114	21.114
2	4.236	22.295	47.120	4.236	22.295	47.120	3.834	20.178	41.292
3	2.234	11.757	58.877	2.234	11.757	58.877	3.341	17.585	58.877
4	.996	5.240	64.117						
5	.928	4.882	68.999						
6	.803	4.225	73.224						
7	.724	3.813	77.037						
8	.686	3.612	80.648						
9	.603	3.176	83.824						
10	.484	2.550	86.374						
11	.461	2.424	88.798						
12	.411	2.165	90.963						
13	.329	1.733	92.696						
14	.296	1.557	94.252						
15	.280	1.473	95.725						
16	.261	1.372	97.097						
17	.204	1.075	98.172						
18	.175	.920	99.092						

19	.173	.908	100.000							

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a] for Interaction Quality

	Component		
	1	2	3
CI.3	.822		
CI.1	.792		
CI.4	.769		
CI.6	.767		
CI.5	.759		
CI.7	.639		
CI.2	.624		
CIII.3		.876	
CIII.2		.834	
CIII.7		.753	
CIII.1		.732	
CIII.6		.658	
CIII.5		.625	
CIII.4		.585	
CII.2			.858
CII.1			.856
CII.3			.777
CII.5			.700
CII.4			.632

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Total Variance Explained for Patient satisfaction

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.104	62.082	62.082	3.104	62.082	62.082
2	.821	16.424	78.505			
3	.666	13.321	91.826			
4	.248	4.964	96.790			
5	.160	3.210	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a] for Patient satisfaction

	Component
	1
DI.4	.880
DI.3	.877
DI.1	.843
DI.5	.669
DI.2	.635

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Total Variance Explained for Patient loyalty

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.970	65.668	65.668	1.970	65.668	65.668
2	.716	23.881	89.549			
3	.314	10.451	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a] for Patient loyalty

	Component
	1
EI.1	.903
EI.3	.787
EI.2	.733

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Appendix 4: LIST OF PUBLIC HOSPITALS IN HOCHIMINH CITY

No.	PUBLIC HOSPITAL	Number of staffs	Number of Physician visits			
			Total	Medical examination	Outpatient treatment	Inpatient treatment
	10 GENERAL HOSPITAL	**10,462**	**6,704,318**	**5,558,815**	**711,270**	**434,233**
1	An Binh Hospital	693	**451,690**	417,162	8,784	25,744
2	Cu Chi Regional General Hospital	1,200	**471,729**	419,141	4,208	48,380
3	Hoc Mon Regional General Hospital	617	**520,598**	467,271	19,220	34,107
5	Saigon Regional Hospital	320	**111,413**	97,248	2,732	11,433
4	Thu Duc Regional General Hospital	714	**606,199**	567,409	7,365	31,425
8	Nguyen Trai Hospital	970	**1,052,529**	613,625	404,276	34,628
9	Nguyen Tri Phuong Hospital	1,218	560,695	493,562	20,597	46,536
6	People's Hospital 115	1,980	882,046	758,809	36,319	86,918
7	People's Hospital Gia Dinh	1,750	1,295,928	1,072,856	155,769	67,303
10	Trung Vuong Hospital	1,000	751,491	651,732	52,000	47,759
	22 SPECIALIZED HOSPITAL	**16,434**	**15,232,091**	**11,144,837**	**3,345,110**	**742,144**
1	Hospital for Tropical Diseases	712	**1,265,241**	632,489	593,120	39,632
2	Binh Dan Hospital	1,100	**777,050**	374,402	362,519	40,129
3	Hospital for Traumatology and Orthopaedics	770	**689,562**	600,858	50,977	37,727
4	Hospital of Dermato-Venereology	250	**721,348**	637,481	82,299	1,568
5	Hung Vuong Hospital (obstetrics, gynecology)	1,147	**752,698**	669,715	17,831	65,152
6	Eye Hospital	840	**993,579**	827,228	115,897	50,454

7	Nhan Ai Hospital (HIV/DIDS)	300	**12,949**	6,341	5,942	666
8	Children's Hospital 1	1,741	**3,397,008**	1,906,495	1,368,807	121,706
9	Children's Hospital 2	1,660	**2,083,340**	1,902,263	71,761	109,316
10	Pham Ngoc Thach Hospital (Tuberculosis)	900	**311,146**	264,790	21,016	25,340
11	Ben San Leprosy Treatment Center	167	**27,851**	21,483	5,215	1,153
12	Hospital for Rehabilitation and Professional Diseases	370	**188,723**	178,282	4,069	6,372
13	Hospital of Odonto-Stomatology and Maxillo-Facial Surgery	329	**142,598**	85,231	44,656	12,711
14	Mental Hospital	467	**214,133**	206,335	3,940	3,858
15	Ear-Nose-Throat Hospital	338	**405,294**	345,889	44,759	14,646
16	Blood Transfusion Hematology Hospital	560	**186,780**	100,933	81,883	3,964
17	Tu Du Hospital (obstetrics, gynecology)	2,280	**1,399,998**	1,050,873	220,240	128,885
18	Oncology Hospital	1,550	**587,239**	445,127	81,920	60,192
19	Traditional Medecine Hospital	270	**495,697**	457,643	31,269	6,785
20	The Heart Institute	583	**340,861**	250,004	84,822	6,035
21	Traditional Medecine Institute	300	**238,996**	180,975	52,168	5,853
22	Children Hospital **(under construction)**					
	23 HOSPITALS OF DISTRICT	**4,337**	**11,253,949**	**10,198,641**	**736,708**	**318,600**
1	Hospital of District 1	124	333,728	322,156	3,321	8,251
2	Hospital of District 2	165	828,006	696,125	93,836	38,045
3	Hospital of District 3	123	268,189	262,491	3,441	2,257
4	Hospital of District 4	200	484,948	462,502	12,622	9,824
5	Hospital of District 5	169	151,521	139,225	7,024	5,272
6	Hospital of District 6	147	273,809	265,759	1,368	6,682
7	Hospital of District 7	113	414,407	401,052	7,042	6,313

8	Hospital of District 8	167	520,072	456,997	45,439	17,636
9	Hospital of District 9	121	171,564	162,277	3,526	5,761
10	Hospital of District 10	183	326,964	318,562	3,930	4,472
11	Hospital of District 11	206	344,524	303,573	36,908	4,043
12	Hospital of District 12	226	313,803	289,070	7,254	17,479
13	Bình Tan District Hospital	286	1,366,505	1,271,460	41,815	53,230
14	Binh Thanh District Hospital	243	1,117,361	777,591	330,530	9,240
15	Go Vap District Hospital	194	350,997	336,128	8,203	6,666
16	Phu Nhuan District Hospital	116	943,952	934,100	4,460	5,392
17	Tan Binh District Hospital	175	434,108	396,758	26,705	10,645
18	Tan Phu District Hospital	203	731,464	639,700	71,854	19,910
19	Thu Duc District Hospital	252	975,080	914,723	15,162	45,195
20	Binh Chanh District Hospital	406	471,031	440,479	4,716	25,836
21	Can Gio District Hospital	234	143,047	139,501	635	2,911
22	Cu Chi District Hospital	154	114,248	106,714	151	7,383
23	Nha Be District Hospital	130	174,621	161,698	6,766	6,157